

ARCHIVES OF OTOLOGY.

A BRIEF HISTORY OF BACTERIOLOGICAL EXAMINATIONS IN SUPPURATIVE OTITIS MEDIA, WITH REMARKS UPON THE RELATIVE VIRULÉNCÉ OF THE VARIOUS MICRO-ORGANISMS.¹

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THE general history of the development of bacteriology, so far as it relates to otology, has been so gradual that only of late have we come to place it in a position of importance. The literature of the subject, so far as it relates to published papers, has mostly been given in a rather indefinite way in connection with the reports of cases, with but little reference as to when, how, or by whom the various micro-organisms had been discovered. It has therefore required considerable search through both general and otological literature to gather the material together and place it in definite form before the members of this Society. Even now some historical details in relation to some of these micro-organisms are apparently not to be obtained. The various forms of micro-organisms observed in the pus of middle-ear suppuration are legion. During recent years bacteriologists have succeeded in clearly defining and classifying several varieties, and much speculation has arisen on the part of observers as to the exact position which should be given to these various organisms as causative factors.

Of the various organisms which from time to time have been found in the pus from the middle ear, the following more important ones may be mentioned in detail.

¹ Read at the meeting of the Section on Otology, N. Y. Academy of Medicine, December 11, 1902.

First: The micrococcus lanceolatus (Sternberg). This coccus was first described as having been found in the purulent exudate from the tympanic cavity by Netter (1). Park (2) considers it to be identical with the micrococcus pneumoniae crouposae (Sternberg), the micrococcus sputi septicæmiæ, and the diplococcus pneumoniae (Fränkel-Weichselbaum).

Second: Bacillus (Friedlander). This was evidently depicted by Netter (3) as occurring in suppurative otitis media, but it remained for Zaufal (4) to definitely differentiate it.

Third: Streptococcus pyogenes. There is considerable controversy as to who first described this organism in suppurative otitis media. It occurs in the illustrations of Netter (*loc. cit.*). It was accredited by Flügge (5) to Zaufal (6) but Zaufal himself accredited it to Netter (7).

Fourth: Staphylococcus pyogenes aureus. Fraenkel and Simmons (8) were evidently the first to find this organism in purulent otitis media. It is interesting to note that the case reported by them was one in which the middle-ear suppuration followed an attack of typhoid fever.

Fifth: Bacillus typhosus (Eberth, Gaffky). Wolf (9) first found it in otitis media, and reported it in his inaugural dissertation. This paper is quoted freely in the *Archiv für Ohrenheilkunde* (10) and more extensively later on by Levy and Schroeder (11).

Sixth: Staphylococcus pyogenes cereus. To Gruber and Weichselbaum (12) belongs the credit of first defining this organism in the pus of otitis media suppurativa.

Seventh: Micrococcus tetragenus. Levy and Schroeder (*loc. cit.*) simply mention this organism.

Eighth: Bacillus saprogenes. Levy and Schroeder (*loc. cit.*) mention it as having been found, and the description by Kanthar (13) is referred to.

Ninth: Bacillus pyogenes. The earliest mention of this bacillus in otitis media is by Gruber and Weichselbaum (14).

Tenth: Staphylococcus pyogenes albus. Gruber and Weichselbaum also first called attention to this organism (*ibidem*).

Eleventh: Staphylococcus pyogenes citreus. To Netter

(15) belongs the credit of the discovery of this organism in the pus of suppurative otitis media.

Twelfth: *Diplococcus intracellularis meningitidis*. Credit for the discovery of this coccus in the pus from otitis media must be given to Frohman (16).

Thirteenth and fourteenth: *Staphylococcus pyogenes tenuis* and the *bacillus tenuis*. These are mentioned together by Scheibe (17).

Fifteenth: Prudden and Northrup (18) are stated to have found a special species of streptococcus of identical reaction with the streptococcus *erysipelatis*, and suggest that perhaps this organism may be the cause of false diphtheritic membranes in purulent otitis media.

Sixteenth: Klebs-Loeffler bacillus. The presence of this bacillus in otitis media suppurativa was first described by Moos (19).

Seventeenth: *Bacillus tuberculosis* (Koch). We must give Nathan (20) the credit for being the first to find tubercle bacilli in purulent otitis media.

Eighteenth: *Gonococcus*. Koenig (21), in a case of suppurative otitis media neonatorum, found the gonococcus in the discharge.

Nineteenth: *Bacillus of influenza*, described by Scheibe (22). The identity of this bacillus has been questioned. The author next in time to lay claim to the discovery of an influenza bacillus is Haug (23). Several other publications appeared during the same year.

Twentieth: *Bacillus coli communis*. This organism was found twice by Chambers (24) whose cases were recently published.

Twenty-first: *Smegma bacillus*. This is a case of my own, operated upon for mastoid complication in chronic suppurative otitis media. The first report of the examination of the pus, hurriedly made, was that it contained tubercle bacilli. The patient's general history did not seem to warrant the presence of tubercle bacilli, and a further and more painstaking analysis led to a final conclusion that the bacillus found was that of the smegma. Since this experience, which occurred one year ago, I have learned in private

conversation with several otologists that similar experiences had been made by them.

In addition to these pyogenic micro-organisms, the infusorium, proteus vulgaris, and bacterium termo are frequently found.

For some time the ablest writers upon otological subjects have pointed out the necessity of making bacteriologic examinations of the pus in all cases of purulent otitis media, and although this involves considerable effort the results justify the procedure. Most of our hospitals have laboratories where such examinations may be made. It is important that these examinations should be made as early as possible in the history of the case—in other words, immediately after a paracentesis or spontaneous rupture of the drum; otherwise the organisms found may have no connection with the primary cause of the suppuration. When pus examinations are made late we must of necessity bear in mind that the attendant micro-organisms may have found their way into the tympanic cavity from without.

Macewen (25) calls attention to this fact. He also believes that the "peccant matter which causes the various intracranial complications is always organismal." He also says "that whether the various forms of intracranial disease have each a distinct specific organism which produces it, and it alone, is for the future to decide. It is, however, probable that the same organism may induce several of these intracranial lesions, the modifying circumstances being: the degree of intensity of its action, its opportunities of access to the intracranial contents afforded by the pathologic-anatomical condition of the parts, and the degree of the restraining force of the living tissues presented by the individual."

I quote Funk (26) who believes "that the various channels through which the middle ear may be infected are through the blood, the Eustachian tube, the tympanic membrane, the petro-squamous fissure, and others, but the most important is the Eustachian tube. There is no specific germ of otitis media, nor is it invariably mono-microbic. The organisms found according to their frequency of occurrence are pneumococci, streptococci, pyogenic staphylococci,

Friedlander's bacillus, and diphtheria bacillus." He also emphasizes the fact, which is well known to all observers, "that in primary tubercular otitis it is almost impossible to demonstrate the presence of the bacillus in the discharge, and recommends that the organisms should be searched for in the tissues removed by the curette."

So far as our present knowledge goes we must assume that the effects of micro-organisms, so far as they relate to various complications of middle-ear suppuration, are chiefly modified by the anatomical surroundings, resisting power of the patient, and probably to some extent by the nature of the pabulum in which they live. All observers admit that, as a rule, the micro-organisms find their way into the middle ear along the inflamed Eustachian tube, and when we consider that the Eustachian tube is a by-path in the respiratory highway, it must occasion surprise that it is not more frequently traversed. Again, it has been frequently demonstrated that the most virulent of the micro-organisms, sometimes found in the Eustachian tube, in the tympanic cavity, and even in the antrum, may be entirely unattended by any inflammatory or suppurative process. One must therefore query as to why they do not always give rise to morbid processes. It has also been demonstrated that they may even be found in the circulation without causing pyæmia or septicæmia. It would therefore seem necessary that some contributing cause should also be present in order that micro-organisms when introduced into the tympanic cavity shall result in suppuration. So far as our present knowledge goes, we can only say that the introduction of pyogenic micro-organisms, plus either a pabulum which renders them especially virulent or else something in the physical condition of the patient, together with certain anatomical characteristics and possibly a general loss of the resisting power of the tissues involved, is necessary to produce a suppurative process. Later studies may tend to clear the horizon and demonstrate the individual characteristics and resultant tendencies of the various micro-organisms. Of the various micro-organisms, both saprophytic and pathogenic, heretofore described, all have been found in varying frequency in

middle-ear discharges. In this connection it might be mentioned that they are often found in combination — that is, several varieties appearing in the same specimen, and it is customary in the reports at the present time to state which variety predominates. For instance, streptococci and staphylococci are usually found in the same specimen, in which case, if the streptococci predominate, the case is more serious than if the staphylococci were most numerous. Other combinations, like streptococci or staphylococci with the diplococcus intercellularis (meningitidis) or the pneumococcus, would seem to give evidence of a more virulent type of pus. It would seem also that the micro-organisms under consideration vary in virulence in different cases, and the virulence may also be dependent upon the accompanying conditions heretofore described.

Of these various micro-organisms the streptococcus pyogenes is now considered the most virulent and to possess the greatest migratory tendencies. The streptococcus and the staphylococcus pyogenes aureus, according to Macewen, are most frequently found in the pus of cerebral abscess and in thrombosis of the lateral sinus. Of late considerable attention has been given to the study of the relative virulence of the pneumococcus, and several observers seem to have concluded that pneumococcus pus is especially liable to result in serious complications. With this I do not agree. As before remarked, the tendency of the milder forms of organisms gradually to give way to the severer forms may account for this observation. The early examination may have shown the milder forms only, while neglected; later examinations may have shown severe forms. Combinations would seem to indicate added virulence. The diplococcus intracellularis (meningitidis) is always to be feared, and especially so when it occurs in combination.

Vernuel quotes one case, Netter four cases, Zaufal four cases, in which they arrived at the conclusion that otitis with pneumo-bacilli runs a much benigner course when alone and not accompanied, especially with streptococci. In my own experience, the streptococcus has been found the most virulent of all the pathogenic organisms found in puru-

lent otitis. This is true both as to the rapidity of its invasions and to the severity of the accompanying symptoms. A few hours will sometimes suffice for an invasion of the attic, antrum, and the cells of the mastoid bone. Many cases could be cited to illustrate this truth. So convinced am I of the truth of this assertion that I rarely make any effort to abort in streptococcus cases, but rather resort to operation much sooner than when only the less virulent types are present.

Dench (26) has emphasized this by advising that the ice-coil be abandoned in streptococcus patients, and to operate after failure to relieve the symptoms by drainage and surgical cleanliness continued from 24 to 48 hours. Out of 33 streptococcus cases he operated upon 28. With this statement I quite agree.

The next most virulent type, in proportion to its frequency of occurrence, is the diplococcus intercellularis meningitidis, and in this I would recommend about the same course of treatment as in streptococcus cases.

The staphylococcus usually occurs in combination, and generally with streptococcus.

The pneumococcus is frequently found, but is not to be considered especially virulent. This organism is probably more frequently present in purulent otitis media than any of the others mentioned.

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THE TREATMENT OF ACUTE OTITIS MEDIA.

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AS the acute inflammatory processes of the middle ear are variously classified in the different text-books, it seems proper to first give an exact definition of the morbid processes with which we have to deal. Most authors distinguish three principal groups:

Acute middle-ear catarrh ;

The simple acute inflammation of the middle ear, otitis media acuta simplex, also called tympanitis acuta simplex ;

The acute purulent otitis media or acute purulent tympanitis.

The subdivisions into croupous and diphtheritic otitis media, myringo-tympanitis, and acute desquamative otitis can be disregarded.

A sharp distinction between these three main groups cannot be made either from an etiological or from a pathological standpoint. They are, in other words, different grades of the same morbid process.

The character of the secretion formed in the middle ear serves as a useful criterion to separate a catarrhal from the more truly inflammatory type. The fluid in the former is serous, while in the latter it is sero-purulent or mucopurulent. The two varieties of the more inflammatory type, the simplex and the purulenta, differ only in degree.

A distinct clinical picture is presented by that disease of the middle ear which depends upon simple occlusion of the Eustachian tube, whether the occlusion be acute or of

some standing. This tubal catarrh is sharply defined by its pathognomonic otoscopic picture, and by the immediate return of the hearing after removal of the tubal occlusion. The secretion, at first serous then later more viscid though transparent, may be regarded as a transudate ex vacuo.

The separation of this clinical picture from the other inflammatory processes was made from its clinical picture and functional findings, even before bacteriology had shown that this morbid process is entirely different from the middle-ear inflammation originating from infectious disease.

The examinations of Zaufal, Hasslauer, and others have shown that the mucous membrane of the normal tympanic cavity is not entirely free from pathogenic organisms. Scheibe and Brieger have examined the exudate in cases of tubal catarrh, and have always found it sterile; Kanthack, however, arrived at the opposite result. It is plain why cases with a collection of serum in the middle ear prove to be more sterile than the normal empty tympanum. Whatever few pathogenic germs were present were acted upon not only by the normally functioning, ciliated epithelium but also by the bactericidal action of the serum and thus rendered sterile. This process is therefore clinically, as well as etiologically and pathologically from the absence of organisms, distinctly to be separated from the truly inflammatory otitides.

Pathogenic organisms are always present in the acute otitis simplex and purulenta.

The attempt to divide the middle-ear inflammations according to the various kinds of organisms found has been generally given up, and the following facts have remained: In thrombo-phlebitis, streptococci are usually found to be present, while the pneumococcus is rarely followed by sinus thrombosis. The kind of organism does not seem to have any especial relation to the severity of the process, whether the simple or the purulent form of otitis. It may be stated that the streptococci were found present in the mildest forms of otitis after measles and after scarlet-fever, where the ear has been found affected in all the cases of children coming to autopsy, though clinically the ear disease was

not marked. This organism is regarded as especially deleterious by some authors. The various general diseases, excepting tuberculosis, whose course is apt to be complicated by otitis, do not give us any clue to divide these two varieties. The most severe as well as the mildest affections of the ear occur in scarlet-fever.

Nevertheless, it seems necessary to distinguish between these two forms clinically, as they differ in the intensity of the inflammatory symptoms and the frequency of accompanying complications. The kind of secretion in both cases is in the beginning sero-purulent, in the severer forms sanguinolent, and later more purulent. The same varieties of pathogenic germs found in the middle ear are present in the mild as well as in the severe inflammations.

The degree of extension of the suppurating process in the various cavities of the middle ear is not characteristic. No acute inflammatory process can be said to limit itself to the tympanum or to any circumscribed area, as pathological examinations have shown that even in cases where the clinical symptoms have been but little marked, as, for instance, in measles, the suppuration was found not only in the tympanum but in the antrum and mastoid cells. A fibrinous exudate may form in the beginning, at various parts of the mucous membrane.

The severe forms are characterized by unusually free discharge. A perforation in these cases occurs early. This usually takes place through the drum-membrane or through any dehiscence area in the bony cells, either on the external mastoid surface, on its lower surface extending under the muscles, or on the internal or dural surface. If these pre-formed defects in the bony walls are well marked, the perforation through the drum-membrane need not take place. This is not unusual if the pus breaks through the lower inferior mastoid surface and gravitates down the neck.

The opening in the drum-membrane must be made if this membrane be very red, swollen, and prominent. If on the following day the ear is dry, the secretion is scanty and the case a mild one. If free discharge follows the paracentesis

for a number of days or weeks, the severe form is present. This holds good in cases with spontaneous perforation. After the presence of this opening our treatment becomes modified, and the possibility of re-infection from the ear canal is present. Hence the division into a perforative and non-perforative form of acute otitis is justifiable. Transitory discharge may take place through a thin scar or atrophic drum, and these cases should be classed with the simple variety.

Acute otitis media gives a straightforward clinical picture when it occurs in a healthy individual after nasal or naso-pharyngeal trouble; the influenzal type is more or less similar. The class of otitis following severe general diseases runs a somewhat different course; the prototype on the one hand is the scarlet-fever otitis, on the other hand the phthisical. These are influenced by the intoxication and disturbance of nutrition from which the body suffers. Acute otitis media in other cases after the appearance of a perforation gives a more or less constant clinical picture.

The perforation if spontaneous is very small, and recognizable by the inflammatory changes in the surrounding area, and appears as a flat pyramidal prominence from which a drop of pus exudes.

The determination of the exact site of the perforation is important for proper treatment. According to some text-books this site is most frequently in the lower anterior quadrant. In my experience the upper and lower posterior quadrants are more frequently selected, and never in the limbus but in the thin intermediate zone or near the umbo. I have never observed an acute perforation in Shrapnell's membrane.

A marginal perforation, multiple perforations, and a rapidly growing perforation in the lower anterior quadrant point to a constitutional trouble, principally tuberculosis. In the presence of a thin scar, a genuine acute otitis may be accompanied by a large perforation. I have only observed a perforation in Shrapnell's membrane in chronic suppurations. The acute perforations have a great tendency to diminish as soon as the discharge is less; a yellowish flat prominence

like a smallpox pustule appears, and disappears in a few days. If the suppurations last some time, secondary changes take place about the perforation site, the prominence grows, and a polypoid growth appears at the apex. I consider this a perfectly normal tissue reaction on the part of a healthy organism. If this does not take place, and the opening tends to enlarge, prognosis and treatment are affected.

In the regular course of an uncomplicated suppurative otitis media, even if it lasts a year, the perforation closes if the individual is otherwise healthy and we disregard the rare cases where a large perforation appears in a scar. The hearing returns to the normal even if the purulent process has lasted for a long time, and no complications have been present, especially no perforation into the labyrinth during the time of suppuration.

The only thing which seems to make the course of a genuine otitis media atypical is the unusually different duration of the disease. It is especially important for us to estimate the reasons for this atypical prolongation of the disease.

The overwhelming influence which bacteriology at present exerts on all clinical views has resulted in considering a marked virulence of the bacteria to be responsible for the protracted cases, as it seems that the kind of bacteria has no distinct influence on the duration. For this supposition no convincing animal experimentation has been furnished.

My observations of operative cases and autopsy-findings have shown me that an anatomical peculiarity which I described ten years ago in the handbook of Schwartz may explain to a great extent the unequal duration of acute purulent otitis. This is the unusual difference in the size and distribution of the pneumatic cells. In cases which were operated upon, and where the suppurative process had existed for one or several months, or had led to death through a complication, it was noticeable that the empyema was found localized to pneumatic cells which were considerably larger than the normal. This same state of affairs was present even though the perforation in the drum membrane no longer existed or never had been present, and where the

suppurating process in the tympanum and in the antrum had more or less run its course.

Since this time an acute purulent otitis which has existed for more than two months, even without complications, is sufficient indication for me to operate. During the last ten years I have regularly found at operations on these cases large cavities, occasionally situated at some distance from the antrum, filled with pus and granulations, so that there is in my mind no longer any question of the connection between an undue size of the pre-formed cells and a prolonged course of the ear disease. If this condition was not found present at operation, an explanation was furnished either by small cells filled with pus next to the sinus-wall or extra-mastoid purulent foci or fœtid decomposition of the discharge through improper treatment, etc. The connection of these large cells with the duration of disease has been completely disregarded by others, and has never even been the subject of serious discussion.

It must be mentioned that frequently large cavities do not correspond to large cells but are the result of disintegration of bone. The rounded form of these cavities makes it probable that we have to deal with the excentric growth of one of the more or less pre-formed larger cavities. Empyemata of varying size, if the entire space is freely laid open, seem to heal in about the same length of time. This surely cannot be regarded as a carious process.

If no complications from the side of the labyrinth, sinus, meninges, brain, or gravitation abscesses are present, disregarding the operative exposure of the cavity, healing can be said to take place in from three to five weeks. The simple exposure of this cavity is sufficient to control the healing process, a fact which seems to me to prove that these cavities are the true cause for the continuance of the suppurating process.

The Treatment of Tubal Occlusion.—If no or only a little serum is collected in the middle ear, a removal of the cause in the naso-pharynx or nose, and the use of the catheter or the Politzer bag in children, suffice to restore the function. If the serum is not mechanically removed and brought to

absorption by the repeated use of the air-bag, I regularly practise paracentesis in the lower posterior quadrant of the ear-drum. The paracentesis is preceded by the mechanical cleansing of the ear canal and irrigation with a 5 per cent. carbolic solution. The serum which exudes after the paracentesis is removed with cotton tips, and if the remainder is not forced into the ear canal by the air-bag, we endeavor to force it by means of the external air douche from the ear canal into the naso-pharynx. We do this because it seems safer to force the air from the auditory canal into the naso-pharynx, rather than the reversed process, inasmuch as we cannot sufficiently disinfect the nose and naso-pharynx. Finally the paracentesis opening is dusted with boric powder.

I have never observed in an experience of many years the slightest reaction or suppuration following this procedure. This is also a proof that the fluid found in the middle ear in the presence of tubal occlusion must be sterile, otherwise the edges of the wound would surely sometimes show some reaction. On the other hand, it also shows that the Eustachian tube normally is protected against the transportation of infectious germs. As soon as an opening is made in the blind sac-like space, which represents the middle ear, blowing of the nose causes a strong current of air to pass to the perforation site, and a rarification of air takes place as under normal circumstances.

The Treatment of Simple Acute and Perforative Otitis Media.—The objects to be attained are the following:

1. The morbid products must be completely removed or their rapid absorption assured;
2. The reinfection of the diseased cavities is to be prevented;
3. Permanent and favorable conditions for drainage.

The opinions on the best plan of fulfilling these various conditions have changed with time, and some recognized methods have been proclaimed as dangerous and even fatal to life. The treatment with astringents has now been abandoned.

The first indication is met by the air douche and paracentesis. "The earlier the catheter is employed the more likely

are we to shorten the inflammatory stage. The slow passage of the air through the tube does not in any way increase the pain in the ear. The patient finds that the heaviness of the head is relieved, and that the pain is soon diminished. It is very noticeable that occasionally after the air douche the tenderness of the mastoid process will be very much less."

These are the very words of v. Tröltsch, a most experienced observer, which were written in the pre-antiseptic era.

Since otological thought has come more and more under the influence of bacteriological theories, there have been many warnings against the use of the air douche as long as the ear disease is in the acute stage, though later its use may be permitted. I have become convinced of the favorable action of air inflation in acute aural inflammation in a sufficiently large quantity of patients, so as not to be frightened on any theoretical grounds.

I do not consider the bacteriological theories to be wrong, but the distrust of the protection which the tubal canal furnishes against the entrance of corpuscular elements in the air current is unreasonable. As long as the drum membrane is not perforated, I have never hesitated to use the air douche and have never seen any harm come from it.

In the severer grades of inflammations where the middle ear is filled with the secretion and the drum is bulging, the air-bag is always preceded by the paracentesis.

The practice of paracentesis has recently been restricted by some colleagues. This is absolutely incomprehensible to me, as I am positive that the opening of the drum membrane at the proper time not only brings subjective relief but shortens the subsequent course. The opening made by paracentesis does not of itself fulfil all the indications, but the secretion must be forced out. For this I prefer the external air douche from the auditory canal, which is also performed during the act of swallowing.

In otitis occurring in the various infectious diseases and in ozæna, the air douche applied in this manner is preferable. Later, when the nose and naso-pharynx are more or less normal, Politzer's method may be employed.

In 1879 I reported upon the favorable influence of boric

acid in chronic and acute middle-ear suppurations. The favorable action of boric acid was especially apparent in the simple chronic forms of purulent otitis, and even at that time the different and less favorable reaction of the chronic otitides with perforation in Shrapnell's membrane, as well as the middle-ear affections in the tuberculous, to antiseptic treatment was noticed.

Acute purulent otitis is not a disease to test the influence of an antiseptic line of treatment, because this disease takes a favorable course with simple cleanliness by use of the syringe and air douche. At the same time I think the shortness of the average healing can be referred to antiseptis.

This method was extensively used in the following years, until Schwartze objected to the use of the boric-acid powder in narrow openings, owing to the danger of a retention of secretion. This view is still being constantly brought forward by some colleagues, although a number of older physicians who have made use of the treatment for a long time consider Schwartze's objection to be exaggerated.

The many dangers of acute middle-ear disease have become better known and appreciated during the last two decades. In recent years acute suppurations have led more frequently to mastoid operation than the chronic; a relation which is the reverse of that existing in former years. The many dangers of acute suppuration are now being judged more correctly and intervention is more timely and energetic. The manner in which a suppuration in the large pneumatic cells of the mastoid after acute otitis may continue as such or by extension become dangerous to life has been fully described by me in previous publications. I am fully convinced that the boric-acid treatment is entirely innocent of the complications, which is confirmed by a statistical report of all the fatal and non-fatal complications met with in the past twenty-eight years.

After paracentesis the air douche is practised from the auditory canal, then a small quantity of boric-acid powder is insufflated by means of a glass rod or pipette. As long as the mastoid process is tender, the ice-bag is applied for hours. It has never occurred to me that the ice-bag was

not well borne, and I have not found it necessary to change to poultices.

I have not used leeches for many years, because they mask the true conditions by causing inflammatory changes in the superficial coverings of the mastoid. In every supuration not more than one irrigation with four per cent. boric acid is practised daily. This is followed by the air douche according to Politzer's method if the naso-pharynx be free.

In the genuine acute purulent otitis the irrigating fluid rarely passes into the middle ear through the small opening. In the case of the large openings occurring in the course of the infectious diseases this is of course likely to occur and the injecting force must be moderated.

I consider a careful drying of the canal by dipping out the discharge with cotton tips to be very important. To remove secretion from the tympanum, the patient is to frequently repeat Valsalva's experiment; then with the aid of a mirror we can dip out the drop of discharge appearing at the opening. This is to be repeated until no more discharge appears. Then the boric-acid powder is insufflated.

The main advantages of this method are :

1. The discharge never becomes foetid, which is in any case unusual in acute suppurations and occurs after the improper application of poultices.

2. The auditory canal remains free from inflammation and swelling during the entire course of treatment. In the cases with perforation, the maceration and thick epidermis disappear quickly and the excoriations heal in a few days. Thenceforth the canal remains free from irritation. This permits us at any time to thoroughly survey the drum-membrane and to recognize the ominous swelling of the posterior and upper bony auditory canal at its beginning significant of mastoid involvement.

During the treatment repeated small operations on the drum-membrane may be made necessary. The opening, if situated in the upper posterior quadrant, must be enlarged downwards. If at any time the perforation is impassable for the air douche, and the drum is again bulging, paracen-

tesis must be repeated at the old site. This is sometimes to be repeated four or more times in the same case.

A polypoid protuberance at the site of perforation requires some description. If it prevents the entrance of air by the douche, it should be incised with a scalpel and the opening enlarged downwards, or a new opening should be made in the lower posterior quadrant. If the hypertrophy has grown to some size, it should be removed with Wilde's snare. If this is done properly we find that the hypertrophy stump shows a central opening. In influenza otitides especially this re-formation of the teat-like protuberance is frequently observed and requires to be repeatedly removed.

I have never used cauterization or a galvano-cautery because I do not like the presence of a scab or an inflammatory reaction. Removal with the cold snare and paracentesis, if performed under antiseptic precautions, are never followed by inflammatory reaction and are always sufficient to keep the opening patent until the suppuration in the middle ear has ceased.

The return to the normal hearing distance (whisper in 4 to 5 *m*) gives us the surest indication when the opening can be allowed to close. After closure, the air douche is to be applied by means of the catheter in adults, and Politzer's method in children, until no noises are perceived by the patient on blowing his nose and the hearing power has become normal. Notwithstanding the normal hearing for voice, the tuning-fork applied to the vertex is transmitted to the affected ear and the upper tone-limit in Galton's whistle may be lowered.

In the last five years between three-fourths and four-fifths of my cases have healed under this line of treatment; in the remainder, namely, one-fifth to one-fourth of the acute purulent otitides, the antrum and mastoid cells had to be opened. This, I think, partly depends somewhat upon the broadening of our indications for operation. Without wishing to enter upon the operative treatment of the mastoid complications, I should like to state how my indications have become extended.

If an acute middle-ear suppuration lasts more than two

months, notwithstanding careful treatment, a complication is surely present which will prevent its healing spontaneously. At operation a large cavity of pus is found in the mastoid, or an extradural abscess or gravitation abscess in the neck, etc. I therefore think that the operation is indicated even in the absence of all local and general symptoms. I do not hesitate to proceed to operation if moderate swelling and pain are present, especially below the mastoid process. In this case I not only remove the covering of the antrum but of the entire mastoid process. The site of perforation in the lower surface is sometimes so deep as to require exposure up to the bulb of the jugular vein.

Finally, I want to protest against two methods of treatment which are recommended in many text-books and are being employed at the present day to a limited extent.

I refer to irrigation through the catheter and to the packing of the ear canal. I have no personal experience with irrigating through the catheter. The fact that the tip of the catheter after its introduction into the mouth of the tube is frequently covered with crusts and tenacious mucus, has been sufficient to show the impropriety of this procedure. These crusts are probably not removed by the air current but would surely be affected by a stream of water and their inflammatory action in the tympanum is very probable.

The reports on this irrigation do not seem to be at all favorable. Buerkner in his text-book cites the statistics of Christianeck, where in the year 1881-82 paracentesis with tubal irrigation was followed by a very severe inflammation and suppuration in 41.2 % of the cases. Hessler also prefers removing the discharge with the simple air douche and has not seen any advantages from tubal irrigation.

In a discussion at the otological meeting in Vienna in 1895, the impracticability of this method in acute suppuration with narrow perforations was agreed to by all. Some of those present also objected to its use in chronic suppurations with large perforations, because the results sometimes could not be controlled and because the injection with the tympanic canula from the ear canal gives better results (Scheibe). This latter opinion is the one which I have

always maintained in discussions. Two fatal cases were reported which followed more or less immediately after irrigation.

It seems to me that with our present knowledge and experience the irrigations through the tube, especially in acute cases, should be abandoned.

The second therapeutic procedure—namely, the packing of the auditory canal—is designated as the “dry method,” as no use is made of the syringe. The thorough cleansing of the ear canal cannot be obtained by this method because for this irrigation is essential. In the first days, after a severe acute otitis, the discharge is so free that a cotton plug placed in the meatus becomes saturated in ten minutes. The packing under these conditions can only act as a poultice. If subsequently the discharge becomes less, the gauze packing permits the fluid constituents of the discharge to be taken up somewhat externally, while the pus cells and the bacteria are caught in the meshes of the innermost layer, just as in a filter. In the external part of the tampon the discharge becomes dried in crusts and the innermost part is saturated with pus so that the action can only be compared to a hot application and the absorbing conditions are far from ideal. It is said that this packing of the canal depends upon surgical principles. If we are dealing with deep wounds we use a drainage tube. Where wound edges are to be kept apart, gauze packing is introduced. In the suppurating tympanum we have a deep-seated suppurating process; can we find a more natural drainage tube than the auditory canal? It surely would not occur to any surgeon to obstruct this drainage tube with gauze.

In the last years we have frequently had occasion to observe cases which have been treated for some time with packing and these have increased so much within the last years that I have had sufficient experience to judge of their unfortunate effects. Dr. Doelger has collected twenty-two cases which had previously been treated by gauze packing. The appearance of the gauze plug is similar to what I have just described. In eleven cases it was of a disagreeable odor and in five very foetid. The canal and drum-membrane

had an entirely different appearance from what we are accustomed to see. The bony canal was narrowed by the concentric swelling and the drum-membrane was covered with thick, irregular, epidermis scales. This thick accumulation of epidermis which frequently occludes the entire recess is not without import. The collections of epidermis, the cholesteatoma, and the simple diffuse external otitis show how rapidly softened epidermis undergoes putrefaction.

The continual accumulation of epidermis by means of gauze packing explains why in half of the cases the discharge was found to be foetid, a condition which in the spontaneous course rarely occurs, but under treatment with boric acid is practically unknown.

These putrefactive products found collected in the auditory canal have not been without influence upon the middle-ear process. As a survey of the complications which these twenty-two cases with packing show, there were :

- 4 cases of empyema of the mastoid.
- 2 cases of gravitation abscess in the neck.
- 2 of empyema and caries of the mastoid.
- 1 of labyrinth necrosis.

In eight of these nine cases the mastoid had to be opened. The ninth case (labyrinth necrosis) did not come to operation.

I think that the increase of operative cases of purulent otitis in recent years is partly due to the practice of this method.

The result of the tampon in two cases of traumatic rupture of the drum-membrane is very instructive. In both cases purulent discharge and inflammatory signs did not appear until the tampon had been introduced, as the ear remained dry and free from irritation during the first days. The appearance of suppuration after the rupture of the drum where the ear has remained dry during the first few days is such an unusual occurrence that its connection with the employment of the tampon cannot be overlooked. I do not wish to say that the treatment with packing is always followed by such bad results. I can only give my experience with the cases which I have seen and in these its action has been very unfortunate.

REPORT OF THE TRANSACTIONS OF THE SECTION ON OTOTOLOGY OF THE NEW YORK ACADEMY OF MEDICINE.

By DR. JOSEPH KENEFICK, SECRETARY.

MEETING OF NOVEMBER 13, 1902.

PRES. DR. JAMES F. MCKERNON, IN THE CHAIR.

Dr. MAX TOEPLITZ presented two cases of **ossiculectomy for chronic suppurative otitis media**,—one, a boy, who had been operated on a year ago at the Montefiore Home, who had had a running from the right ear with considerable odor for several years. There was perforation and the use of the probe in the attic showed considerable grating. There was some hesitation as to whether the operation should be the radical operation or ossiculectomy, but the latter was finally deemed more advisable and was performed. The ossicles on removal were found carious. After operation the otorrhœa and the odor ceased and the boy appeared well. He passed from observation and has since not been seen until quite recently. At present there are some odor and a few granulations on the posterior wall of the meatus. It was considered probable that a radical operation would have to be done in this case.

The second case was in a child, aged eight years, operated on four weeks ago at the Post-Graduate Hospital; giving the history of continuous discharge for six years, much odor, and examination with the probe revealed grating in the attic. The ossicles were removed, the incus was normal, and the malleus was carious. Discharge and odor ceased, the ear is now perfectly dry, and the general health of the patient improved.

The question seemed to be as to when the ossicles should be removed and when not. Dr. Toeplitz thought that if diagnosis could confine the disease to the middle ear an ossiculectomy would be sufficient, but inasmuch as other parts were often

involved, and as this was only to be ascertained by free exposure, the question still remained. He considered it wiser to make an ossiculectomy as a preliminary, followed later by the radical operation if the discharge did not cease, and gave as his experience in twenty cases only one in which the second operation was required.

Another important point he brought up was as to what promises could be made with regard to hearing after operation. He cited a case seen in consultation in which other physicians had promised improvement; he was not so hopeful, and as the case turned out the hearing was worse after than before operation. He was in favor of a guarded prognosis.

Dr. WENDELL C. PHILLIPS presented the case of a young man with a history of **chronic otorrhœa** for twelve years past, following an attack of pneumonia. Until last January there had been a continuous discharge with evidences of necrosis of the ossicles and the annular ring. An ossiculectomy was performed. For two months after operation there was some little pus but since then the discharge has entirely ceased. The treatment of the case was most carefully followed out. The entire surface is now dermatized and there is very little connective-tissue formation. There is considerable depression of the oval window. The case is presented on account of the very good hearing results, this being no doubt due to the favorable conditions in the region of the oval window.

Dr. T. P. BERENS asked Dr. Toeplitz if, in the case he cited, he knew that other physicians had promised good hearing. He considered this a very important point, as patients have been known to state that certain promises were made which the physician did not make at all.

Dr. TOEPLITZ said he could vouch for one as he heard the statement made to the patient in his own office.

Dr. BERENS asked Dr. Phillips if he knew whether he had removed the stapes and entered the foramen ovale.

Dr. PHILLIPS had not entered the foramen ovale and could not be sure whether he had gotten the stapes or not.

Dr. TOEPLITZ asked Dr. Dench's opinion of ossiculectomy.

Dr. DENCH thought that if the tuning-fork examination before operation showed the lesion to be limited to the conducting mechanism almost invariably good hearing would result. The statement was qualified because of the possibility of accident.

He also thought that where the tuning-fork reaction demonstrated middle-ear lesion without existing labyrinthine lesion the hearing is almost always improved, sometimes marvellously so. He did not think the depression marking the site of the oval window mentioned by Dr. Phillips uncommon.

Dr. H. L. SWAIN stated that he had recently observed a case where, twelve years ago, the ossicles had been removed by the late Dr. Sexton, who had said at the time of operation that whatever hearing was possessed after operation would be retained. During the twelve years the hearing has on the whole improved a little. He considered this valuable in making a prognosis. He had also had another case in point in a man, aged eighty-four years, in whom the drum and ossicles of one ear were lost in youth and who now hears only in that ear, the other one having become totally deaf, from middle-ear sclerosis.

Dr. LEDERMAN spoke of two cases in which the malleus and incus had been removed from chronic suppuration, and the hearing was lowered for six weeks after operation, but improved after this period; consequently we may anticipate a temporary lowering of the hearing power in a certain number of such cases.

Dr. E. L. MEIERHOF spoke on the controlling of suppuration. He believed that every case of chronic suppuration in the middle ear was accompanied by suppuration in the mastoid antrum, and thought there was reason to believe that if we could bring about a healthy condition of the tympanic cavity and accomplish drainage from the mastoid antrum a cure could be brought about in many cases where the radical operation seemed to be indicated.

Dr. MCKERNON asked Dr. Phillips if the hearing in his case was better four months ago than at the present time.

Dr. PHILLIPS could not speak positively on that point, but said that the hearing when last tested was decidedly better than before operation.

Dr. MEIERHOF presented a case of **absolute occlusion of the external auditory canal from an exostosis and ecchondrosis from the anterior wall of the canal**, an unusual position for such growths. According to tests the ear seems normal, sound conduction is good, and some hearing is present. He has hesitated about rendering the canal patent by operating, but the patient now complains of neuralgia radiating from that side of the head. He has not been able to determine whether or not

operation is advisable, owing to the unknown depth of the exostosis and possibility of completing the operation so as to have a successful result.

Discussion.—Dr. DENCH thought that the exostosis should be taken off. He thought it difficult to tell how far the growth extended, but considered that if at any time the patient should have middle-ear suppuration, occlusion of the canal would be a serious matter. He thought the exostosis should be removed, bearing in mind the fact that it is wiser to take off a thin layer of normal bone underneath. He had seen several cases in which removal of the growths was followed by excellent results.

Dr. THOMAS R. POOLEY spoke of a case reported by him in the *Transactions of the Medical Society of the State of New York*, where an operation for exostosis of the auditory canal had become necessary on account of pain in the head, as mentioned by Dr. Meierhof in his case. The operation was performed by means of a drill, worked by an electric motor, set to cut to a given distance. The growth was removed without damage to the membrana tympani. The occlusion in this case was not absolute, a small probe could be passed.

Dr. LEDERMAN thought that the tuning-fork tests were important in these cases, especially if bone-conduction is good. He also thought that in the operation, which in the case presented ought to be performed, the after-treatment was most important in regard to the prevention of formation of an atresia, and suggested the introduction of a tube to keep the canal patulous.

Dr. DUEL presented specimens made by Dr. T. Passmore Berens and himself of **Wood's metal**, showing studies of the accessory sinuses, etc. The formula for Wood's metal is:

C. P. lead.....	32 parts
“ “ tin.....	16 “
“ “ bismuth.....	60 “
“ “ cadmium.....	12 “

The lead should be melted first and the other metals added in the order named, waiting till each has melted. Its particular advantage is that it melts at 65° C. and can be melted in boiling water. It is easily handled when molten and when poured into cavities by its weight displaces water or other fluid which may be present and fills the smallest recesses. It hardens quickly, producing a beautiful cast. It is used in making corrosion preparations—the

bone being removed after the cast has been made — and transparencies, the bone being rendered transparent, allowing the metal in the sinuses to shine through. The latter are useful in studying topography and relations, while the former show accurately the details of the cavities. Casts of the larger cavities in their natural state may be made from the cadaver by pouring the molten metal into them, allowing it to harden for twenty minutes and then removing the bony walls by the chisel or rongeur forceps.

The following specimens were exhibited :

1. Specimen made by pouring the molten metal into the external auditory meatus of a cadaver, the ear being previously cleaned and filled with boiling water.
2. Specimen made by pouring the metal into the nares of child, filling the nares and naso-pharynx.
3. Corrosion specimen showing the mastoid cells, the labyrinth with all details, also the ampullary nerve; this illustrates how the metal fills even the smallest cavities.
4. Specimen of the labyrinth.
5. Transparent specimen of the temporal bone of a child injected with mercury.

This illustrates the instability of mercury preparations as compared with Wood's metal.

Dr. PHILLIPS presented a new **mastoid retractor**, designed as a modification of Allport's retractor. He considers such an instrument will be an advantage in holding the mastoid wound open during operation, so that so much hand retraction as is required by the modern operation could be dispensed with.

Dr. THOMAS R. POOLEY read a paper on **affections of the labyrinth resulting from general and organic diseases**.

Discussion : Dr. DENCH considered Dr. Pooley's paper a thorough and excellent résumé of the subject. He thought Dr. Pooley had misunderstood his treatment by pilocarpine as he had not used it hypodermically, but by the mouth. He was glad to hear mention of pain in the side of the head in cases of syphilitic deafness as one such case had recently come under his observation.

Dr. TOEPLITZ asked if it were possible for disease of the middle ear to be transferred from the middle ear to the labyrinth directly through the walls. His experience was that such could not be done unless there was a traumatic lesion of the outer labyrinthine wall leading to the middle ear. He stated that Politzer's

assertion in this regard had since been proven erroneous, namely, that there is no connection between the vessels of the labyrinth and those of the middle ear. Whenever there is inflammation of the labyrinth it comes from the inner side of the labyrinth or by metastasis; infection of the labyrinth from the middle ear is by injury.

Dr. LEDERMAN reported a case of labyrinthine deafness due to typhoid fever in a young female, who was an inmate of a deaf-and-dumb asylum for seven years. He made careful tests and found that on one side there was marked nerve deafness. Under treatment with potassium iodide, strychnine and pilocarpine, local massage and inflammation, hearing improved sufficiently to allow her to go to work. He thought that when the onset of deafness is sudden it shows direct involvement of the labyrinth. He spoke of three cases under his observation where nausea and vomiting followed surgical manipulation of the middle ear for suppurative disease; vertigo and nausea were so pronounced as to prevent the patients from getting up, one for one week, one for four days, and another for several hours, showing that the symptoms were due to disturbance of the labyrinth. In two of these cases the vomiting was projectile and suggested some central irritation. Dizziness was very prominent immediately after the local treatment and continued for a few days in the first patient.

Dr. MEIERHOF stated that he had examined the inmates of an institution for deaf-mutes of 220 patients. Among them there was no case of deafness from mumps, also the proportion of cases due to cerebro-spinal meningitis was not so large as that given by Dr. Pooley.

Dr. J. HERBERT CLAIBORNE congratulated Dr. Pooley on his masterly contribution to a subject which, though very important, had heretofore not received the attention it deserved. Owing to the fact that he was gradually withdrawing from otological work, he had had little experience with labyrinth disease. He had observed cases of Ménière's disease, but they showed no peculiar symptoms. He mentioned a case seen sixteen years ago, of a man with complete nervous deafness on one side who lost the hearing of the other ear, suddenly, as if it were by the "explosion of a pistol." There were no symptoms of congenital syphilis in this case and infection was denied. The man had lived a sporting life and was a hard drinker. There was no

response to the use of iodides. Recently he had observed labyrinthine symptoms in persons suffering from hypermetropia, who have said that tinnitus occurred when the eyes were strained. He also reported the case of a young man with muscular asthenopia, who stated that he had ringing in the ears whenever he read in a bright light. Dr. Claiborne wished to know if other members of the Section had observed similar cases.

Dr. SWAIN replied that he had seen several cases where the ear symptoms disappeared after proper glasses had been prescribed. He considered the symptoms due to hyperæmia. He also reported an interesting case of internal-ear disturbance in an old man who was suddenly conscious of blurred hearing following simple influenza. After ten days the "nerve deafness" was so marked that the tuning-fork c (128) could not be heard at all on the deaf side by bone-conduction. For five or six days there was a maximum of deafness, after which the hearing improved to the former status. He considered this due to rise of pressure in the internal ear, as the deafness cleared up so well under treatment, exactly as we explain the blindness from increased intra-ocular tension in acute glaucoma.

Dr. MCKERNON extended the thanks of the Section to Dr. Pooley for his paper.

He mentioned a series of cases showing another form of labyrinthine affection due to excessive use of alcohol. The symptoms disappeared under the use of pilocarpine, rest, cuppings, and withdrawal of the cause.

MEETING OF DECEMBER 11, 1902.

PRES. DR. JAMES F. MCKERNON, IN THE CHAIR.

Exhibition of New Instruments.

Dr. LEDERMAN presented a **portable acetylene lamp**, known as the Puritan, for use of the physician, giving a steady light and being a convenient article to carry. The fuel consisted of calcium carbide from which a gas was generated (by the action of water), which, escaping through an automatic valve regulated by a movable diaphragm, furnished a steady flame. The length of time which the lamp will burn without replenishing varies with the size of the lamp; the one exhibited burned four hours on one charging. The price of the lamp is five dollars.

Dr. F. J. QUINLAN stated that he had used this lamp with great

satisfaction, and that he considered it an ideal one for illuminating purposes. Its light resembles a pale sunlight, and the flame was steady. He thought it was just what the physician needed, and that, all things considered, it was not an expensive article, and was always ready for use with little cost and slight attention.

Dr. CARL KOLLER presented a case of **sinus thrombosis, followed by hypoglossal paralysis**, in a girl, G. S., twenty-one years old, who was admitted to the Mt. Sinai Hospital June 30, 1902. For two weeks she had, after some tonsillitis, been suffering with pain in the left ear, general headache, and high fever with chilly sensations. Four days later paracentesis of the left drum was made in the dispensary; no pus. On admission some tenderness was found over the mastoid tip and antrum and over the posterior part of the mastoid. Pronounced tenderness along the upper course of the jugular. Wry-neck of moderate degree. The drum was not thickened but of a pale greenish color, as if a green exudate adhered to it on the inner side. No discharge. The fundus in both eyes showed marked venous congestion. On the next day this had progressed so much as to leave no doubt about papillitis developing.

Operation on July 1st.—Preliminary paracentesis; considerable serous discharge. After the first removal of bone a minute quantity of pus was found. Sinus was accordingly opened, its wall being exceedingly thin. It was situated very superficially and well forward, overlapping the antrum. It bled freely. It was exposed for about one inch; it was blue in color, narrow and bulged considerably. Some granulations were found in the antrum and the posterior cells; those of the tip were free of pus or granulations. Iodoform gauze dressing. The subsequent course was that, after a short intermission, the temperature continued septic in character. Patient complained of severe headache in the left side and occiput, and extreme tenderness in the upper course of the jugular. Papillitis increased visibly so as to deserve the name of choked disc. Blood culture sterile.

Operation on July 11th.—(1) Curettage of sigmoid sinus; (2) ligature and excision of the jugular. The dura mater of the median fossa was exposed over the tegmen tympani and antri; it did not bulge and appeared normal. Then the sinus was exposed in its entire length, going as near as possible toward the bulb. It was thrombosed. Upon curetting it bled freely from above, but the bleeding from the region of the bulb was not satisfactory. Then the

jugular was tied and dissected as high up as possible; about 1½ inches of it were excised. It was not thrombosed. A culture of the thrombus found in the sinus was sterile. Temperature in the next days ranged somewhat over 102°. Some tenderness over the wound in the neck and in the upper part of the posterior cervical triangle. On July 14th the patient complained of severe pain in the head and pain on swallowing. The general condition was not so good, the patient being weaker and paler. On July 16th, gauze packing was removed from the sinus, and from its lower end some pus escaped with distinct pulsation. A rubber tissue drain was introduced toward the bulb and kept in that position. From now on till July 27th the temperature was almost normal, there was no pain, and the general condition was very good. On July 27th the temperature rose again, and from now on kept intermittent; patient began again to complain of severe headache. No pus came from the sinus from the direction of the bulb. A tender, diffuse swelling appeared in the upper third of the posterior cervical triangle. A communication existed between this swelling and the jugular bulb, for on pressing upon the swelling pus escaped from the lower part of the sinus. On August 4th, the deep abscess situated between the deeper muscles of the neck and near the base of the occiput was opened and drained. With the probe one could feel a spot of the occipital bone near the condyles denuded. However, fever and pain continued. The presence of another abscess near the bulb of the jugular was decided on, and on August 14th this second abscess was searched for and found at very great depth. It was reached from behind after having tried in vain to reach the bulb of the jugular through the old wound in the neck. On August 16th, two days after this last operation, it was noticed that the tongue, when protruded, deviated to the left. On the next day the complete symptoms of hypoglossal paralysis were present on the left side. Besides, patient complained of difficulty in swallowing. When the sense of taste was examined it was found diminished in the posterior thirds of the the left side. Temperature remained high. The discharge of pus was very profuse for a few days, then it stopped almost suddenly about one week after the last operation. Temperature became and remained normal and the patient made a quick recovery. The papillitis cleared up gradually; however, it took many weeks to disappear. The hypoglossal paralysis improved more slowly, and traces of both can be recognized to this day.

In discussing the case, which in many particulars differs from the typical picture of thrombophlebitis of the sigmoid sinus, Dr. Koller wished to say from the beginning that it most likely was a case of primary phlebitis of the jugular bulb. This class of cases has been lately brought into prominence by Jansen and others. The mechanism of infection is not quite apparent yet, but the shortest route would suggest itself as the most likely and that would be directly from the tympanic cavity to the bulb of the jugular, which lies in so close proximity. Perhaps congenital peculiarities would predispose an individual to this danger. The patient exhibited rapidly developing papillitis which does not belong to the typical symptoms of thrombosis of the sigmoid sinus, although it is regularly met with in the thrombosis of the cavernous sinus. But, according to Jansen's statements, papillitis is a common occurrence in the cases of primary phlebitis of the jugular bulb. The conditions revealed by the first operation agree fully with that view taken of the case. The abscess in the bulb must have perforated and burrowed under the deep muscles of the neck until it appeared in the upper part of the posterior cervical triangle. Macewen gives another explanation of these deep abscesses. He states that they owe their origin to phlebitis of the condyloid emissary veins. However this may be, recovery did not take place until a second abscess, which was deeper yet and which was evidently the original periphlebitic abscess, had been opened and drained. There are a number of unusual symptoms connected with the case. Wry-neck is sometimes found in cases of thrombosis of the jugular, and the explanation given by Koerner and others is that, the movements of the head toward the other side being painful, the head is instinctively held in the wry-neck position to ward off pain. It is hard to understand why this symptom should occur only in a comparatively small number of these cases. At different times in the history of this case presented we found noted difficulty in swallowing. A few days after the last operation the disturbed sensation of taste and motility of the tongue made their appearance, proving paralysis of the glosso-pharyngeal and hypoglossal nerves on the left side. It is not impossible that this may have been due to injury, although Dr. Koller felt pretty sure this was not the case. Considering that the function of all the three nerves, the ninth, tenth, and eleventh, leaving the skull through the jugular foramen in close proximity to the jugular bulb, was disturbed, and that the

twelfth, leaving through the condyloid foramen, was paralyzed, it may not be too far-fetched to assume that the periphlebitic abscess was responsible for it, just in the same way as we sometimes see facial paralysis in cases of mastoiditis.

Discussion of Case Presented by Dr. Koller.—Dr. LEDERMAN spoke of a case which showed a number of symptoms similar to those reported by Dr. Koller, from re-infection of the sinus due to sepsis of the wound. He asked Dr. Koller if in his case he had not found a rather narrow mastoid. The reply was affirmative. Dr. Lederman thought that in cases of narrow mastoids where the sinus is near the posterior tympanic wall infection was apt to occur early in the disease, as the bulb of the sinus projects into the floor of the tympanum. He had seen one case where early in the disease there was marked thrombus in the lower portion of the sinus, and considered this also a case of primary infection of the bulb. He thought it was important to be satisfied that all infected material was removed at operation. He congratulated Dr. Koller on the excellent results in his case. He further recalled a case reported by Kipp, operated on for sinus thrombosis. The sinus was opened and found thrombosed with a septic clot, but the patient showed symptoms of shock, the operation was discontinued, and the jugular was not ligated. In spite of the infective thrombus the patient recovered, though a metastatic abscess appeared in the gluteal region. Dr. Lederman stated that he would feel very anxious with a septic thrombus in the sinus or bulb when the jugular vein had not been ligated.

Dr. T. P. BERENS thought that Dr. Koller's case raised an interesting point in diagnosis: the fact that the patient had severe wry-neck would indicate pressure on the spinal accessory nerve and he thought it would be well to recollect this point. He further believed that in all cases of wry-neck we should look about the region of the bulb to see if pus can be detected.

Dr. MCKERNON spoke of a patient, aged eleven years, who showed marked wry-neck. There was no sinus involvement, but an abscess low in the neck causing pressure on the spinal accessory; after the evacuation of this the stiffness gradually ceased.

Dr. KOLLER wished to emphasize the difference between thrombophlebitis in acute and chronic cases. In cases of chronic ear diseases we are more apt to have phlebitis of the sinus, but if in acute cases we find symptoms of pyæmia or affection of the

jugular then the bulb should be looked after, for it is more likely that the bulb be affected rather than the sinus.

Dr. LEDERMAN presented a case which he had shown a year ago, of a young man with **chronic suppurative otitis**, who was struck over the ear, with the result that the disease was augmented and symptoms of mastoid infection and jugular thrombosis arose. The usual operation was done, the mastoid opened, and carious tissue and pus removed; sinus thrombosed; the jugular was then tied one inch above the clavicle and a portion was resected. The tributaries were not ligated. The sinus was then opened and scraped. The parts were then curetted and the patient was in good condition. All went well for about five days, when chill and high temperature developed, and pus was found in the lower portion of the sinus wound. The wound was opened, but no pus was found, and it was concluded that the parts drained through the antrum. In five more days the temperature again rose; then it was found that the posterior sinus wound was infected. An inch and a half of bone was chiselled away, and the wound curetted till good return of blood was obtained. The patient did well and was shown as cured. For five months he was all right, when the ear began to discharge and a little granulation tissue and a portion of the incus were found to be present in the middle ear. These were removed under cocaine. Three months ago the patient returned with a little fistula in the scar over the mastoid which led into the antrum. Probing disclosed bare bone. The Schwartze-Stacke operation was done, and the result up to the present time is good. However, there was marked facial paralysis, which has slowly improved. The case is somewhat remarkable for the number of serious operations undergone. Dr. Lederman also thought the case illustrated the necessity of exercising great care in the thorough removal of all diseased tissue. He asked the opinion of the members of the Section as to the chance of complete recovery from the facial paralysis. The whole cavity has healed over, though the last operation was performed two months ago, and no sign of supuration is present, though moisture occasionally comes through the Eustachian tube.

Dr. BERENS asked when the facial paralysis had developed.

Dr. LEDERMAN replied: Three days after operation.

Dr. BERENS stated that he had at present under observation a similar case, in which, seven days after operation, facial paralysis

began and is now complete. He was sure he did not touch the facial nerve. He thought Dr. Lederman's case was sure of some improvement, but that complete recovery was unlikely for a long time to come.

Dr. T. J. HARRIS thought the subject of facial paralysis following these operations was interesting and very important. He did not believe that any one doing otological work was exempt from this unfortunate result. He did not think it was an accident in most cases, but that it was the result of the thorough removal of tissue which advanced cases required, and he considered that the surgeon should not be blamed. In private practice it presents a serious question, and he thought it wise to present to the patient the fact that such a result is a possible sequel of the operation, as well to guard the patient against dissatisfaction and disappointment as to protect the operator. In reference to the ultimate result, in two cases in children with partial paralysis he had gotten complete recovery; also in another case in which the facial was wounded with resulting marked paralysis, the recovery has been complete. He did not believe that the nerve was often cut, but that it might be wounded, and he thought complete recovery was to be looked for.

Dr. LEDERMAN stated that he felt more hopeful in regard to the facial paralysis in his case, as some improvement had occurred. He mentioned another feature of the case, namely, the presence of moisture in the Eustachian tube. He spoke of another case under treatment, in which after operation the result was good, but from time to time re-infection occurs whenever the patient takes cold. The Eustachian tube has been curetted several times without permanent closure of same.

Dr. MCKERNON presented a case showing the result of the combined operation, which he had spoken of several times. This operation consists in the removal through the canal of the ossicles, granulation tissue, and superior part of the tympanic ring, all the dead bone, cleaning out the mastoid antrum and cells, going through into the middle ear, widening the aditus, and then, instead of taking away the posterior wall of the middle ear, removing it and making a typical Stacke, he simply cuts a quadrilateral window through the posterior wall, through which the interior of the middle ear is plainly visible and can be cleaned out. Afterwards a piece of gauze is passed through the canal and out into the mastoid wound. Dr. McKernon has done

several such operations in the past two and a half years. In the second case atresia resulted and a second operation was required.

The case presented had suppuration since infancy.

Dr. McKERNON thought it easier to remove the ossicles by way of the canal, and by taking away the superior and posterior portion of the tympanic ring he thought a better exposure was obtained. The case shown does not differ as to results from many others. He thought in this operation there was little danger of wounding the facial nerve, unless it were necessary to go down very deep. In a series of twelve cases, lately done, he had not found it necessary to carry the operation so as to expose the nerve. He thought the particular point of advantage was the firm cicatricial condition of the middle ear as compared with the results, in many cases, of the Stacke operation, and the absence of mastoid disfigurement.

Dr. R. C. MYLES asked how he removed the inner-upper part of the osseous canal.

Dr. McKERNON replied, Through the external auditory canal.

Dr. W. C. PHILLIPS asked whether after opening the mastoid antrum, Dr. McKernon carried the opening in the external table directly through the aditus to the attic.

Dr. McKERNON replied that he took in that portion underneath the roof of the posterior canal, simply taking out a quadrilateral section.

Dr. PHILLIPS thought that, if he rightly understood the operation described by Dr. McKernon, it was favorable in that it caused less deformity. He had not done the operation after this method, but he had done similar ones. He had had more cases in which he felt that the mastoid cells were not particularly involved, in which event he did the typical Stacke operation.

Dr. R. C. MYLES asked Dr. McKernon what caused the atresia in the case he mentioned.

Dr. McKERNON said it was due to an attempt, after the quadrilateral window was made, to split the cartilaginous portion of the canal instead of taking out a V-shaped flap.

Dr. LEDERMAN asked how long it took these cases to heal and what drainage was used.

Dr. McKERNON said it required about the same time as any other mastoid operation,—seven to twelve weeks; the case presented healed in nine weeks. As to dressing, for the first week a wick of gauze was passed from the posterior wound through the middle

ear and out through the canal. The mastoid wound was packed. Afterwards through drainage was discontinued and the mastoid and middle ear packed posteriorly.

Dr. W. C. PHILLIPS read a paper entitled "A Brief History of Bacteriological Examination in Suppurative Otitis Media, with Remarks upon the Relative Virulence of the Various Micro-organisms" (p. 1 of this number).

Discussion.—Dr. LEDERMAN mentioned three cases in which the diplococcus intercellularis meningitidis was present, but the pathologist had pronounced this insignificant. The usual mastoid operation was performed without untoward symptoms. He was pleased to know that the subject had been further studied.

Dr. MCKERNON asked Dr. Cunningham the result of his investigations in the statistics collected at the New York Eye and Ear Infirmary.

Dr. CUNNINGHAM stated that he had collected statistics for Dr. Dench at the New York Eye and Ear Infirmary. The most frequent bacteria only were considered. From the collection it was inferred that the ice-coil was practically useless in 90% of cases of acute streptococcic infection as a means of abortion, whereas in pneumococcic infection alone the ice-coil would probably cause resolution in 86%. In mixed infections the conclusions were about the same in accordance as to whether or not the streptococcus was present. The inference was, therefore, that the presence of the streptococcus indicated a very virulent type of inflammation, while the pneumococcus indicated a milder form. Dr. Cunningham stated that these statistics only apply to cases which are strictly in the acute stage of inflammation.

Dr. MCKERNON said that several years ago at a meeting of the American Rhinological and Otological Society he brought out the fact, in a series of fatal cases of brain abscess with middle-ear disease, that in all cases bacteriological examination should be made and if streptococci predominated a guarded prognosis should be given. Many others now concur in this opinion who at the time thought it far-fetched. He further wished to state that infection resulting from the diplococcus intercellularis meningitidis is far more active in his experience than the streptococci. He reported a case, seen in April, in which the first pain in the ear occurred at 11 A.M. At 2 P.M. the drum-membrane bulged. The membrane was opened and the discharge (serous in character) examined and revealed the diplococcus meningitidis in great abun-

dance. The patient was immediately put to bed and watched carefully for four hours; he then had a tender mastoid and pus discharging from the middle ear. Between 10 and 11 P.M. the mastoid was opened and found to contain pus. He was unable to say whether the infection had been latent. Since then he has had two other cases almost as rapid, in which within twenty-four hours the mastoid filled with pus. All of these cases recovered.

Dr. PHILLIPS spoke of his first experience in finding the *diplococcus intercellularis meningitidis*. He immediately questioned the patient for brain symptoms, but found that it was simply a mastoid case and operated. The patient made a good recovery. In his experience with this organism an operation has been required in every case. He was not, however, prepared to state its comparative virulence positively, although he felt that it was nearly if not quite as virulent as the *streptococcus*. With regard to the ice-coil in streptococcic cases, he thought that it not only was contra-indicated but might, as a result of delayed operation, lead to great harm.

REPORT OF THE TRANSACTIONS OF THE NEW YORK OTOLOGICAL SOCIETY.

BY DR. ARNOLD KNAPP, SECRETARY.

MEETING OF NOVEMBER 25, 1902. THE PRESIDENT, DR. H. KNAPP,
IN THE CHAIR.

Presentation of Patients.

Dr. BRANDEGEE presented a patient fifty-five years of age, upon whom he had operated for **sinus thrombosis**. Five weeks ago she came to the infirmary with ear trouble of ten days' standing. Temperature was 102°. At operation an abscess was found in the antrum and the sinus was unusually prominent. On exposure it appeared very black and was excised. A parietal clot was evacuated and bleeding restored from both sides. The temperature remained up on the second day. On the third day it came down only to go up again without any chill. It was then decided to operate in the neck and the jugular vein was exposed. It seemed normal except the portion from the facial junction upward where it contained a clot. The entire vein was resected and staphylococci were found in the walls. The patient made an uninterrupted recovery; the temperature after the second operation did not go up.

Discussion.—Dr. DENCH wished to emphasize the fact that the temperature remained high for two days, then went down, then again on a subsequent rise it was immediately decided to ligate the internal jugular, which he thought was a very important point—namely, waiting for the second rise of temperature. He also wished to call attention to the results of the wound in the neck, which were unusually good, as the wound had healed by primary union.

Dr. GRUENING said that he was not able to get primary union in these cases of operating in the neck for jugular-vein thrombosis.

Dr. DENCH thought he was generally able to obtain primary union, and thought that cases in which we failed were generally due to infection from the hands transmitted from the mastoid wound, which operation usually preceded the wound in the neck.

Dr. ARNOLD KNAPP presented a patient who had had **thrombosis of the jugular bulb and very severe pyæmia.**

The patient was a man, twenty years of age, who had been under treatment for a mastoid fistula and external otitis when he suddenly became very ill with headache, vomiting, and great prostration. Temperature was 105.6° ; pulse 130. On the following day the antrum was exposed containing granulations and pus. The tympanum was also laid bare and contained granulations. On removing the tegmen antri healthy dura was revealed. As the bone directly posterior to the antrum was honeycombed with pus, the operation was extended in this direction and some free pus was found on the surface of the sigmoid sulcus. The sinus in this region was covered with apparently healthy granulations; lower down it was normal and soft. Puncture in two places gave fluid blood. Two days later, as the pyæmic temperature remained, the jugular vein was ligated. The ligation was somewhat difficult on account of the presence of enlarged cervical glands. The vein itself was found perfectly normal. The sinus was also exposed as low down to the bulb as possible and on being incised contained fluid blood. Notwithstanding these two operations the patient proceeded to go through a pyæmia of nine weeks' duration. The greatest variation in temperature was 13° , going from 108.8° in one evening to 95° the next morning. Metastatic abscesses were formed in the subcutaneous tissues of the forearms and legs, and in the deep cellular tissue beneath the recti insertion just above the symphysis, the latter focus in turn involving the perineum, the testicle, and adjoining areas of the thigh. On the whole, the patient was anæsthetized seven times. There were very few chills. There was no apparent lung involvement and no diarrhœa. Optic neuritis was present. The sensorium throughout this entire period was free and the nourishment was always well taken. Owing to the poor condition of the patient the ear wound was allowed to take care of itself; in other words, no attempt was made to tampon the tympanum and consequently

the entire area filled with granulations and is covered with epithelium.

Discussion.—Dr. MCKERNON asked whether the temperature curve had been influenced by the evacuation of the metastatic abscesses.

Dr. KNAPP replied that it was impossible to determine any relation between the height of the temperature and the suppurating process. The metastatic abscesses gave pure cultures of the streptococcus.

Dr. HARRIS inquired what the treatment, besides surgical, had been.

Dr. KNAPP replied that the patient had been given milk, as much as he would take, whiskey, and strychnine.

Dr. ARNOLD KNAPP exhibited a **specimen of an unusually distended sigmoid sinus and jugular bulb** obtained from a patient who had died of meningitis. The case has been described in extenso in the ARCHIVES OF OTOTOLOGY, vol. xxx., No. 5. The peculiarity of the sinus was that it presented an unusually distended condition and that the anterior wall was normal while the posterior was infiltrated and very much thickened, and on its surface contained necrotic tissue. There was no thrombus found at autopsy.

Dr. WHITING inquired whether a clot had shut off the jugular bulb? It had not. There was an ante-mortem clot removed at autopsy but the infiltration only involved the posterior wall of the bulb.

Dr. GRUENING had met with cases of distended sinus and also remembered a case with the temperature of 105° where the sinus could not be found at operation; the dura seemed to be absent and the brain softened. At autopsy the sinus was found and there was an abscess at the posterior wall; the cerebral side of the sinus was thickened and covered with pus.

Dr. MCKERNON had seen a case in a patient of fourteen years, where the sinus appeared to be obliterated and could not be found at operation. Autopsy revealed a cerebellar abscess and the dura was very much thickened. The incisions which had been made in the dura could not be found as the layers of this membrane were glued together.

Dr. DENCH operated on a case six or seven years ago where he could not find the sinus and thought it had become obliterated through the purulent process.

Dr. ALDERTON asked why, in Dr. Gruening's case, he did not have to deal with an abscess and sinus converted into one cavity.

Dr. GRUENING spoke of a boy with a temperature of 106° with all the clinical symptoms of sinus thrombosis. The sinus could not be found. The jugular was ligated and the patient recovered.

Dr. DENCH asked if in this case the wall of the vein was examined microscopically.

Dr. GRUENING said, No.

Dr. DENCH presented a **hammer and incus found lying loose in the attic** of a patient on whom he had performed the radical mastoid operation some ten days ago. The hammer and incus were tightly bound together and enveloped in a mass of granulation tissue. He thought this was interesting from several standpoints: first, that it was unusual to find the two ossicles bound together; and second, that it shows the disease was limited to the attic. He said the case was one of recurrent mastoiditis apparently, and he found that the mastoid was very little involved and that there was a good deal of softening near the tympanic vault. The ordinary radical operation was completed, a Panse flap made, and the posterior wound left open. Dr. Dench said that very many of these cases of recurrent mastoiditis are really exacerbations of a chronic otitis, and that we should, in these cases, be prepared to do a radical operation inasmuch as the mastoid operation, though relieving the symptoms of the patient, would not be followed by cure.

Discussion.—Dr. GRUENING thought this was the usual course pursued.

Dr. WHITING said he was about to operate on a case very similar where, six weeks after the onset of the otitis, during scarlet-fever, the mastoid had been operated. The operation did not appear to have been a radical one inasmuch as the tip had remained and the zygomatic cells were probably untouched and also that the incus was left. In this case the external wound healed. When he saw the patient there was an abscess in the mastoid again which was only kept in by a thin skin covering, and after opening this the probe encountered bare bone. The otoscopic picture showed a large perforation through which he said he could detect necrosed bone.

Dr. TOEPLITZ inquired whether Dr. Whiting thought he was able to ascertain by the otoscope and the aid of the probe the extent of the necrosis.

Dr. WHITING claimed that he did not think he could exactly determine the extent, but thought he was able to determine the presence of necrosis.

Dr. TOEPLITZ also thought it was customary in cases of acute mastoiditis supervening in the course of a chronic otitis to do a "two-time" operation, thinking it was not quite safe to do the complete operation in the presence of acute infection.

Dr. WHITING saw no advantage in this course.

Dr. DENCH wished to explain that in a great many of these cases we have not really an acute process to deal with, and that we are often misled by the history.

Dr. HARRIS wished to know whether we should do the radical operation in these cases at once.

Dr. WHITING thought, as a rule, not.

Dr. ALDERTON thought that the function should be considered.

Dr. WHITING said he had reoperated on at least fifteen cases operated elsewhere and thought this was due to an insufficient operation in the first place.

Dr. DENCH was surprised at the good hearing he had obtained after doing radical operation.

Dr. ALDERTON thought we must bear in mind that we cannot promise a patient that his discharge can be absolutely cured even by radical operation.

Dr. WHITING said we can at least prevent intracranial complications.

Dr. ALDERTON said we must not forget the good results that were often observed in cases left to nature, and especially the good results functionally.

Dr. DENCH had recently obtained very good results in covering the mouth of the Eustachian tube with a skin graft. He thought that careful operation, especially about the region of the oval window, in the radical operation, would be followed by as good functional results as by removal of the ossicles.

Dr. HERMAN KNAPP reported a case of a patient completely deaf in one ear, who suffered from mastoiditis with sinus thrombosis in the other. The patient was operated on by a surgeon, at the same time the greatest regard was taken for the preservation of the hearing power, and an excellent result, both vital and functional, was obtained.

Dr. GRUENING thought that in most cases after radical operation the hearing was impaired, hence he had become very

conservative and only advised this operation when absolutely necessary.

Dr. MCKERNON thought that hearing after radical operation at first was apt to be very much better than it was a year later.

Dr. WHITING spoke of a case presenting a perforation above the short process with symptoms of retention. The patient desired the least radical treatment, but he would not agree to it and performed the radical operation. He found the incus entirely gone, the aditus widened, the tegmen antri absent, and the antrum extending downward into a large granulating cavity almost as far as the tip.

Dr. GRUENING thought that defect of the tegmen antri and the presence of granulations in the dura in this region were not at all infrequent, and thought that in these cases we must remember that the site of the disease is in the antrum and not in the ossicles, and consequently the removal of the ossicles would not be sufficient to cure the patient.

Dr. DENCH thought the ossicles could be removed just as carefully and with as little damage through the posterior opening as through the canal.

Dr. DUEL thought removal of the ossicles furnished a better drainage for the cavities, and should be done for this purpose where there was evidence of necrosis of the attic walls, even though there was no necrosis of the ossicles themselves.

Dr. MCKERNON spoke of 14 cases where he had performed an atypical operation, namely, draining the middle ear through the posterior opening. He had had excellent results in 11 of these.

Dr. WHITING had performed this method but had given it up on account of subsequent atresia of the canal.

Dr. MCKERNON thought this was due to the fact that the fibro-cartilaginous part of the canal had not been completely detached, as he had had only one case of atresia.

Dr. DUEL presented an **aural snare** which had been introduced by Dr. Oatman ten years ago and described at that time in the *Medical Record*. The advantage was that the ends of the wire were held down by two eccentric levers so the wire could be shortened at will.

Dr. WHITING spoke of an instrument which he had described and called the **encephaloscope**, which he thought of great advantage in brain abscesses and thought it was entitled to greater use. He described two brain abscesses which he had recently

operated upon where he had been very much helped in the after treatment by this instrument. The first was an acute abscess. On spreading open the walls of the abscess it was possible to survey the entire lining of the cavity and to see that there was no dense fibrous membrane and that the brain substance everywhere was shut off by very thin, pink granulations. He thought in this case irrigating would have forced the pyogenic material into the neighboring brain structure, and as there was no dense resisting membrane he drained the entire cavity by the insertion of a single wick of iodoform gauze, the walls collapsed completely, and the patient recovered. In the second case the abscess was chronic, and on examination with the encephaloscope the walls were everywhere found to be dense and fibrous and covered with pus. He inserted a single drain, but this did not do well, and shortly after he filled the cavity with iodoform gauze. This had as a result change of the entire healing process, and at present the wound is healing well.

REPORT ON THE PROGRESS OF OTOTOLOGY
DURING THE SECOND QUARTER OF
THE YEAR 1902.

BY DR. A. HARTMANN.

Translated by ARNOLD KNAPP, M.D.

ANATOMY.

65. **Anton.** Studies on the distribution of lymphatic tissue in the Eustachian tube and in the tympanum in the foetus, in the newly born, and in the child. *Zeitschr. f. Heilk.*, vol. xxii., No. 7.

66. **Rozier.** The floor of the tympanum. *Ann. des mal. de l'or., du lar.*, No. 4, 1902.

67. **Denker.** On the anatomy of the hearing organ in the cetacea. *Anat. Hefte*, vol. xix., No. 2, 1902.

68. **Ramon y Cajal.** The termination of the external lemniscus in the secondary acoustic nerve tract. *Deutsche med. Wochenschr.*, No. 16, 1902.

69. **Mangakis.** A case of Jacobson's organ in man. *Anatomischer Anzeiger*, vol. xxi., pp. 106-109.

70. **Hinsberg.** The development of the nasal cavities in the amphibia. Part III., Gymnophions. *Arch. f. mikrosk. Anatomie*, vol. lx., pp. 369-385.

71. **Peter.** The plan and homology of the turbinates in man and in the vertebrates. *Arch. f. mikrosk. Anat.*, vol. lx., pp. 339-367.

65. The author has investigated this question macroscopically and microscopically in serial sections. The material studied consisted of 3 foetuses, 6 newly born children, 10 children of one year, and 16 children from 1 to 10 years of age. The entire extent of the Eustachian tube was examined and it was found that adenoid tissue shows a certain constancy both in amount and in form in the tubes of the foetus, the newly born, and the child. In the foetus lymphatic tissue is absent in the tube; in the newly born it is usually present; in children it increases up to the second year and then appears to diminish. In the newly born it appears as a cellular infiltrate of the striated fascia; in the first

year as a ring-formed zone of infiltration at the pharyngeal end, and an infiltration in the shape of folds at the tympanic end of the tube. Between the first and the tenth year there is a uniform and complete infiltration of the folds which project into the lumen of the tube. Occasionally in the pharyngeal segment lymph follicles are present. A correlation between the pharyngeal tonsil and the lymphatic tissue of the tube may exist, but is not regularly present. The system of folds at the tympanic end of the tube is prolonged into the tympanum in the form of circumscribed round structures, sometimes raised above the level of the membrane, which appear like warts, and microscopically are dense lymphatic infiltrations with sharply defined areas of concentration. The author has designated these structures as the tympanic tonsil.

PIFFL.

66. This careful paper, richly illustrated, presents nothing new. The topography of the recessus hypotympanicus is mentioned. Its thin lower bony wall communicates by venous and arterial vessels with the jugular vein and the carotid artery and it may contain many pneumatic cavities.

ZIMMERMANN.

67. Two skulls of the *phocæna* and a fresh head of the brown-fish were examined. DENKER gives an exact description of the external, middle, and internal ears of this species of whale, and believes that hearing takes place as follows: The sound waves transmitted through the water strike the bones of the head. The air contained in the pneumatic spaces within the bony skeleton of the head is set in vibration. These vibrations act upon the lateral labyrinth wall, especially on the cochlear window, and through this the impact is communicated to the fluid of the tympanic scala. The stapes is not adherent to the margin of the vestibular window. The author, however, does not believe that this bone together with the other ossicles serves as a sound conveyer because the external ear is very narrow and tortuous and the hammer is adherent to the tympanic bone.

ESCHWEILER.

68. This paper is not at all suited for a short abstract.

NOLTENIUS.

69. A soldier presented two symmetrical tracks on both sides of the nasal septum. These passages began with two broad openings at the middle of the anterior part of the septum, and termi-

nated in the middle of the posterior free margin. Both tracks were 6.2 *cm.* long. The anterior openings were easily seen to communicate with each other through the septum. The tracks were lined with mucous membrane similar to the nasal mucosa of the respiratory and olfactory regions of the nose.

ESCHWEILER.

70. This paper is a continuation of one reported in volume xxx. of these ARCHIVES. As in the case of the anures and the urodeles, the olfactory plate occurs in the gymnophions through the lengthening of the sensory layer of the ectoderm while the protecting layer of the latter disappears. The olfactory plate develops into the olfactory groove, and this, in turn, forms a blind bag with a narrow external opening. The olfactory bag is, in the beginning, in connection with the pharynx by means of a solid epithelial strand; secondarily, this receives a lumen and develops into the naso-pharyngeal passage. The olfactory groove is situated in the gymnophions between the median and lateral frontal processes. Finally, the development of the lower blind sac is treated of, and appears to be less of a homologue than an analogue of the Jacobson's organ in the amniotes.

ESCHWEILER.

71. The author discusses the paper of Schoenemann and differs from the latter author as regards the origin of the ethmoid turbinals. While the maxillo-turbinal and the naso-turbinal perhaps develop from the lateral nasal wall, the ethmo-turbinals originate from the original median—that is, the septal wall of the primitive nasal cavity. This cannot be definitely proven in man. It can, however, be assumed to be correct by analogy from conditions found in the vertebrates. The homology between the turbinals of the vertebrates and man may be expressed as follows:

The maxillo-turbinal		corresponds to the	concha inferior,
The naso-turbinal		" " "	agger nasi,
The ethmo-turbinal I.		" " "	concha media,
" " " II.		" " "	concha superior,
" " " III.		" " "	concha suprema,
" concha obtecta		" " "	bullae ethmoidalis.

ESCHWEILER.

GENERAL.

a.—REPORTS AND GENERAL COMMUNICATIONS.

72. **Randall.** Report of ten years' work in the aural department of the University. *Univ. of Penn., Medic. Bulletin*, May, 1902.

73. **Cheatle.** Report on the examination of one thousand school children between three and sixteen years of age, in the Hanwell District School, including the Ophthalmic School.

74. **McMillan.** Examination of hearing in the school children in Chicago. *Medicine*, Detroit, April, 1902.

75. **Gutzmann.** On the speech of the deaf. *Deutsche med. Wochenschr.*, No. 18, 1902.

72. The female sex is more predisposed to catarrhal deafness than the male. In one-sided affections the right ear is affected earlier and more severely than the left in the female, while in the male it is the opposite. Paracentesis was performed about one hundred times in acute cases. If the Eustachian tube was open, operation was deferred till the pain became excessive and could not be relieved. Douches of very hot water acted favorably. In more than one hundred cases of mastoid inflammation the pain, redness, and swelling were relieved by this procedure.

CLEMENS.

73. The first school contains children from the poorest parts of London, the Ophthalmic School receives children with eye disease from all parts of London. Examination of hearing was made with the whispered voice at a distance of eighteen feet. The hearing power was more or less defective in 520 cases. In 432 children the ears were found normal. The external ear was found diseased in 49, the middle ear in 518, and the internal ear in one child. The various pathological processes were tabulated and discussed. Adenoids were present in 434 cases. In 174 cases they were associated with enlargement of one or both tonsils. In 394 of the cases of adenoids the ears were also affected; in 40 the ears were normal.

HARTMANN.

74. Of 6729 children between the ages of six and eighteen years, 1080 (16 %) were deaf in one or both ears. The examination was made by means of the audiometer, the construction of which is described.

CLEMENS.

75. In this paper the author shows that the normal perception of speech takes place through three senses: the hearing, sight, and touch. If the hearing is partly or completely destroyed the other two senses step in and in a proportionate degree to the amount of deafness. Hence it becomes apparent that the totally deaf will learn lip reading much more rapidly and better than one who is only pronouncedly deaf. To show that these three senses are more or less associated the author cites the observation of

Goldammer, that children who have been born blind under the same circumstances generally learn to speak later than those who can see. While we employ the hearing and sight in an entirely conscious manner for the perception of speech, the condition of the sense organ is entirely different. GUTZMANN relates that most normally speaking persons are very little instructed as regards the movements of the tongue in speaking, and are not usually able on command to move the mouth and tongue up or down, to the right or left. As the power to bring the tongue into a definite voluntary position plays an important role for the deaf, when they learn to speak, it would seem that for these patients it would be a great advantage if they were taught from their youth to pay more attention to the sense of touch. It is, moreover, very important for the deaf to obtain comprehension for pitch and intensity of tone by the aid of touch, because in this way only can the disturbing monotony of the speech of the deaf be overcome. Naturally the hearing remnants must be employed to improve the speech. For this purpose the author uses a hearing tube which enables the deaf one through a lateral branch of the tube to compare the speech of the physician with his own, and thereby to imitate as nearly as possible in pitch and intensity the words spoken by the physician. The sight is of aid to the deaf, because with the aid of a mirror the movements of the tongue and lips can be followed. The sense of touch can be employed by the patient holding with one hand the larynx of the physician and with the other his own larynx in the region of the thyroid incisure. After considerable practice and perseverance the deaf can distinguish distinctly differences in the pitch and intensity of enunciated vowels and the monotony of their speech is thereby diminished.

NOLTENIUS.

b.—GENERAL PATHOLOGY AND SYMPTOMATOLOGY.

76. **Schumacher.** Ear disease in abdominal typhoid. *Wratsch. Gasete*, No. 19, 1902.

77. **Frost.** A case of primary erysipelas of the throat migrating to face via left Eustachian tube and auditory canal. *Am. Medicine.*, Apr. 26, 1902.

78. **Manasse.** Two cases of isolated rheumatic disease of the maxillary bones. *Münch. medic. Wochenschr.*, No. 20, 1902.

79. **Harland.** Somnolence in ear disease. *Phila. Med. Journal*, 29, March, 1902.

76. The author examined the ears of 100 children suffering

from abdominal typhoid. He comes to the following conclusions:

1. Pathological changes in the ear occur in abdominal typhoid in children in 47 % of the cases and if the cases with injection of the mucous membrane of the tympanum are to be considered the number rises to 78%—that is, ten times more frequent than in adults. 2. The number and intensity of the ear diseases in children are in direct relation to the severity of the typhoid. 3. The infection reaches the middle ear from the naso-pharynx and through the blood. 4. Irrigation of the naso-pharynx with the syringe must be avoided as this may further the passage of the secretion into the Eustachian tubes. 5. The ears of patients suffering from typhoid must be constantly looked after; neglect of this may lead to dangerous results. SACHER.

77. A woman, æt. fifty-three, was seized with pain throughout the body, redness and swelling of pillars, pharynx, and tonsils, œdema of uvula. On the 2d day swelling of the right, on the 4th day of the left submaxillary glands, two days later the glands between the angle of jaw and the left ear became involved; on the fifth day dysphagia and albuminuria, on the 9th purulent otitis, followed by cutaneous erysipelas over the ear, cheek, and forehead, anterior portion of scalp and whole face including the chin, and the neck. The right middle ear also became involved, but subsequent to involvement of face. All symptoms subsided on the 16th day. Recovery. TOEPLITZ.

78. In both cases the pain was referred to the ear. SCHEIBE.

79. The patient, eighteen years of age, complained of a tendency to sleep as soon as the attention was not actively engaged. Occasional discharge from the left ear since childhood. The attack of somnolence had previously occurred during a period of suppuration from the ear. After removing the discharge the somnolence disappeared, which it did also on its next recurrence. CLEMENS.

C.—METHODS OF EXAMINATION AND TREATMENT.

80. **Leiser.** Air- and bone-conduction. *Arch. f. Ohrenheilk.*, vol. lv., p. 147.

81. **Melzi.** On the use of the hard-rubber bougie in chronic affections of the Eustachian tube and the middle ear. *Arch. internat. de laryngol., d'otol. et de rhinol.*, vol. xv., No. 2.

82. **Alt.** Subcutaneous paraffin injections. *Monat. f. Ohrenheilk.*, 1901, No. 9.

83. **Pynchon.** Pneumatic massage. *Laryngoskope*, May, 1902.

84. **Hopkins.** On the use of compressed air in chronic otitis media. *Annals of Otol.*, Feb., 1902.

85. **Lichtwitz.** On the treatment of lupus in the ear and nose with hot air. *Arch. internat. de laryng., d'otol. et de rhinol.*, vol. xv., No. 1.

80. Leiser claims that we should only compare air- and bone-conduction under exactly the same conditions, and that the sources of sound and the vibrating tuning-forks should be held equally distant from the bone in testing the bone-conduction as they are from the ear in testing the air-conduction. In this respect, in practising Rinne's experiment a mistake is often made. In his examinations he has always found the bone-conduction to be much greater than the air-conduction. Weber's experiment depends not upon the restricted discharge of the waves, but on the increased sensibility (affection of Corti's organ in middle-ear disease) and on the increased resonance (obstructed cerumen). The increased bone-conduction in Rinne's experiment can be explained in the same way. According to the author both experiments have a diagnostic value.

HAENEL.

81. The author has been able to cure three cases of middle-ear catarrh by slow dilatation of the Eustachian tube with hard-rubber bougies.

SCHWENDT.

82. With the aid of injections of white vaseline, according to Gersuni, a defect in the mastoid process as large as a bean resulting after an operation for cholesteatoma was brought to close. In the same patient a contraction deformity of the auricle resulting from perichondritis was also completely corrected by injections of paraffin. The reaction after the injections was slight.

PIFFL.

83. In middle-ear disease the slow vibrations, 30 to 90, give the best results. In labyrinth affections the more rapid, 300 and over, to the minute, are preferable.

CLEMENS.

84. The hot air must be introduced into the external ear, leaving a space for the returning air. Rise of temperature results from increasing the pressure. Before application a double layer of gauze is introduced into the canal. The hot air is used in conjunction with other treatment.

CLEMENS.

85. The radical removal of lupus, with the subsequent transplantation of skin, is not available in the nose and ear on account

of deformity. After describing the various methods, including that of Finsen, the author recommends the treatment with hot dry air, as demonstrated by Hollander in Moscow. This apparatus is modified so that the tubes through which the hot air leaves the apparatus can be approached as near as possible to the diseased part. It is not necessary to go beyond $120-130^{\circ}$ in order to induce destruction of the lesion. The procedure is not especially painful, and healing is rapid without deformity.

SCHWENDT.

d.—DEAFMUTISM.

86. **Schubert.** Examination of the deaf-mutes in the institutes of Nürnberg, Zell, and Altdorf. *Sonderabdruck aus der Festschr. zur Feier des 50 jährigen Bestehens des ärztlichen Vereins Nürnberg, 1902.*

86. Seventy-two inmates were examined and the results were somewhat different from those usually obtained. Absolute deafness in both ears was found in 12 children; slight hearing remnants in 27; 33 were found capable of receiving instruction by hearing. The usually favorable number of the last class is explained from the fact that under the children examined three were not really deaf-mutes. One child was able to understand conversational voice at 8 m, two could hear whispered voice at 8 m. The children were examined with Bezold's continuous-tone series, and the etiological factors were determined. The author regrets that the period of vibrations is not determined in the case of Bezold's tuning-forks, as some of the forks from the München Institute showed great differences. This different intensity became especially apparent in the transition from the tuning-forks to the pipes. The source of error is that to determine the hearing duration tuning-forks rich in overtones are employed. According to Schubert, the vowel *u* is quite correctly enunciated by many completely deaf. This is explained because each sharply phonated *u* is associated with a slight blowing which can be felt if we pronounce the five vowels in a loud tone against the back of the hand. The vowel *u* has, therefore, to be placed with the explosive consonants.

The practical result of this examination is the establishment of hearing classes in these various institutions. HARTMANN.

EXTERNAL EAR.

87. **Eitelberg.** A case of neuralgia of the auricle. *Wiener med. Presse*, No. 26, 1902.

88. **Mounier.** Erroneous purulent otitis caused by cervical glands opening into the auditory canal. *Arch. internat. de laryng.*, etc., vol. xv., No. 3.

89. **Bandelier.** Spastic mydriasis from foreign body in the ear. *Münch. med. Wochenschr.*, No. 21, 1901.

87. Neuralgia of the auricle, simultaneous hyperæsthesia of the skin of the head of a patient aged sixty years, after influenza.

BRUEHL.

88. A broken bunch of glands below the mastoid process perforated into the external auditory canal through the opening of Santorini, simulating Bezold's mastoiditis. Recovery after operation.

SCHWENDT.

89. The mydriasis disappeared on removal of a glass bead from the auditory canal by syringing. It is worth while in cases of foreign body in the ear to look for this symptom. SCHEIBE.

MIDDLE EAR.

a.—ACUTE MIDDLE-EAR DISEASE.

90. **Sune y Molist.** Treatment of acute purulent otitis with extension to the mastoid. *Archivos latinos de Rhinol. Laryng. d' Otolgia.*, Ann. xiii., No. 115.

91. **Coussieu.** On the bacteriology of acute middle-ear disease. *Ann. des mal. de l'or., du lar.*, 1902, 5.

92. **Burnett.** Scarlatinous empyema in the anterior and superior cells of the mastoid. *Am. Jour. Med. Sci.*, March, 1902.

93. **Randall, B. A.** Modern operations on the mastoid process, with remarks on one hundred new cases. *Am. Jour. of the Med. Sci.*, April, 1902.

94. **Harris, T. J.** Temperature after mastoid operations. *Annals of Otology*, May, 1902.

90. The author describes his method of treatment in an extensive paper with the contribution of fifty-two case-histories. An unusually favorable action is obtained from the administration of the salicylate of soda in doses of one gram every hour until symptoms of salicylism set in—tinnitus in both ears, deafness in the healthy ear. At this point the aural and the retro-auricular pain disappeared.

HARTMANN.

91. COUSSIEU has examined twelve cases and found that the presence of only one micro-organism speaks for a rapid course, while the presence of a number probably means a chronic course. The infection frequently follows secondarily, and can be restricted by asepsis of the naso-pharynx and auditory canal.

ZIMMERMANN.

92. A patient, eighteen years old, with acute otitis, after scarlet-fever, suffered from enormous swelling of the cheek and œdema extending to the eye. At operation an opening was found in the bone above and behind the bony external auditory canal. Recovery.

CLEMENS.

93. Among 100 operations performed by RANDALL during the last two years, the antrum was exposed in 49, 39 radical operations and 2 Stacke operations were performed. In acute otitis the application of heat was the best method of treatment. More than 1000 mastoid inflammations disappeared after the application of heat, which procedure failed in only 12 cases.

CLEMENS.

94. In 90 % of the cases the temperature did not rise above 102.4° F. In 67 % it remained under 101°. The author concludes as follows: Moderately high temperatures are usual after mastoid operations. The cause for elevation of temperature is not to be determined. Unless accompanied by other symptoms mere rise of temperature is of no significance.

CLEMENS.

b.—CHRONIC SUPPURATIVE OTITIS.

95. **Grunert.** On the occurrence of glycosuria following otitis. *Arch. f. Ohrenheilk.*, Bd. lv., p. 156.

95. GRUNERT gives the history of this subject, which has not received very much attention, and adds two personal observations from the ear clinic in Halle.

I. A patient with chronic purulent otitis showed no sugar in his urine on the day of admission on a mixed diet. Cerebral symptoms were present, increasing subsequently. They were associated with polyuria, the glycosuria was not influenced by the withdrawal of carbo-hydrates. The glycosuria disappeared entirely after a very large quantity of serous fluid had been evacuated from the cranial cavity.

II. A man, aged forty-seven, suffered from an otitic extradural abscess. On the day of his admission to the hospital he was on mixed diet, and his urine was free from sugar. Two days later, the diet not having been changed, the urine showed sugar. An intracranial collection of pus was then let out, and the sugar disappeared. In the first case it is undecided whether the increase in the ventricular fluid associated with external hydrocephalus and consequent increase of pressure in the ventricles, especially

the fourth, can be regarded as the cause. Probably such increased intracranial pressure cannot be regarded as the only cause. In the second case, owing to the smallness of the extradural abscess, no increased pressure within the cranial cavity could have taken place. It is therefore assumed that the toxic influence starting from the abscess is responsible for the transitory glycosuria similar to the transitory glycosuria occurring in phlegmonous and septic processes, and to the repeated presence of sugar in the urine occurring at the height of acute otitides, which is also supposed to be toxic. The author considers that the origin must have been started reflexly from the ear.

HAENEL.

C.—CEREBRAL COMPLICATIONS.

96. **Braunstein.** On extradural otitic abscesses. *Arch. f. Ohrenheilk.*, vol. lv., p. 168.

97. **Barker, A. E.** Cerebellar abscess with sudden paralysis of the respiratory centre. *Brit. Med. Jour.*, 19th April, 1902.

98. **Alt.** A healed case of otitic thrombosis of the sigmoid sinus and jugular vein, with metastatic pulmonary abscess. *Wien. med. Presse*, No. 24, 1902.

99. **Dench, E. B.** Treatment of sinus thrombosis after aural suppuration. *Am. Jour. of Med. Sciences*, May, 1902.

100. **Lermoyez.** A case of pyæmia due to thrombophlebitis. *Ann. des mal. de l'or., du lar.*, 1902, 1.

101. **Furet.** A case of thrombophlebitis of the right lateral sigmoid sinus. Operation. Death. *Ann. des mal. de l'or., du lar.*, 1902, 1.

102. **Laurens.** Extradural abscesses with pachymeningitis of otitic origin. *Ann. des mal. de l'or., du lar.*, 1902, 2.

103. **Zeroni.** On otitic meningitis. *Aerztliche Mittheilungen aus u. f. Baden*, Nos. 10, 11, 1902.

104. **Broca and Laurens.** Meningitis following chronic otitis simulating cerebral abscess. *Ann. des mal. de l'or., du lar.*, 1902, 1.

105. **Caboche.** Cerebral hernia following intracranial operations in middle-ear suppurations. *Ann. des mal. de l'or., du lar.*, 1902, 4.

106. **Hinsberg.** On operative exposure of the jugular bulb. *Allg. med. Central-Zeitung*, 1902, No. 15.

107. **Daae.** Acute suppurative otitis media, osteomyelitis of the mastoid, epidural abscess, sinus phlebitis. Operation. Recovery. *Norsk Magazin for Lægevidenskaben*, Bd. lxii., No. 8.

96. **BRAUNSTEIN** reports 88 cases of uncomplicated extradural abscess which have been operated in the Halle Ear Clinic since the date of Grunert's paper. Extradural abscesses were found in the ten years, 1891-1901, in 8.2 % of all mastoid operations. Of these, 4.2 % were in acute and 4 % in chronic cases.

Of all the acute middle-ear suppurations with involvement of the mastoid process, extradural abscesses were found in 1.8 %, in 1 % of all chronic middle-ear suppurations, and of acute and chronic suppurations 1.3 %; 76 % were observed in males, and 24 % in females. The second decade seemed to be the most affected in chronic cases and all cases taken together. In the acute cases the fifth decade seemed to be preferred. The right and left sides were affected equally. The chronic abscess was situated in 70 % of the cases in the posterior, and in 28 % in the middle cranial fossa. The abscess in the acute cases occurred in 73 % of the cases in the posterior, and in 22 % in the middle cranial fossa. The extradural abscess is always the result of disease of the bone adjoining the dura, and is the result of purulent inflammation of the external surface of the dura. In the chronic cases otoscopic examination revealed a severe ear trouble. There was always a deep-seated disease of the temporal bone and generally a passage leading to the abscess. This was wanting in a few cases of caries, where it is possible to assume that the diseased bone had already recovered and that the progress took place along a microscopic channel. Of the chronic cases, three were associated with deep-seated abscess. In the acute cases the otoscopic picture did not reveal the severity of the intracranial complication. In one-third of the cases there was no suppuration from the ear, but the surroundings of the ear were usually affected. At operation the temporal bone was partly carious and the cells in the cavities contained pus and granulations. A fistula to the extradural abscess was present in eleven acute cases. The fistula in the acute, as well as in the chronic, led to the abscess in the sigmoid sinus in only one-half of the cases. Among the acute cases there is one which Grunert has described, namely, deep-seated abscess in the region of the lacerated foramen, extension from the tympanum along the carotid canal. The abscess in the chronic cases was, in general, larger than in the acute cases. They were generally shut off by granulations on the dura. In one case there was a gravitation abscess starting from the extradural abscess (retropharyngeal abscess in deep-seated extradural abscess). The dura in all cases was changed, usually to a marked degree, covered with necrotic granulations, or softened or covered with fibrinous exudate. The granulations in the acute cases usually appeared more or less recent. In the acute cases the diplococcus pneumoniae of Fraenkel was usually present. This

germ can probably be regarded as the cause of these abscesses. In the chronic cases the diplococcus was never found. Staphylococci and streptococci and, in one case, tubercle bacilli were found. The streptococcus can be regarded as the most frequent cause of chronic abscess. The important and comprehensive chapters on the diagnosis must be read in the original.

The local changes in the ear and its surroundings show no diagnostic symptom characteristic of extradural abscess. Suspicion of extradural abscess, however, is in order if œdema or abscess occur upon the mastoid process in the region of the mastoid emissary or the occipito-mastoidal suture, or near the supra-meatal spine, the linea temporalis, or in the bony auditory canal. An unusually profuse otorrhœa may come from intracranial suppuration. Headache was absent in more than one-half of the cases. "The exact localization of these headaches—whose intensity does not stand in any relation to the insignificance of the objective symptoms—may serve as an aid to diagnosis." "In patients who are not apt to exaggerate and show no morbid process which can explain the severe headache, the ear must be very carefully examined, and with the slightest foundation for suspicion in this region the presence possibly of an extra-dural abscess must be reckoned with."

Facial paralysis and pathological changes in the eye grounds are of no aid in diagnosis of extradural abscess. Variations in the pupil, retardation of the pulse, stiffness and rigidity of the neck point to increased intracranial pressure. Attacks of vertigo, gastric symptoms, and fever do not, according to the experience of the Halle Clinic, stand in any causal relation to the intracranial abscess. An exact diagnosis of an uncomplicated otitic extradural abscess is impossible. A diagnosis of probability can only be made. Positive diagnosis is only made on operation.

Operation performed at the proper time gives a good prognosis. Recovery took place in 76 % of the chronic and 89 % of the acute cases. Death never resulted from the evacuation of the abscess. The treatment of the lesion by operation is fully discussed. The granulations should not be removed from the dura and should be meddled with as little as possible. The paper concludes with a review of the 88 case histories. HAENEL.

97. The patient was a girl, aged fourteen years, who, while being lifted on to the table for operation, suddenly ceased breathing, and death occurred in spite of pus being evacuated from the

cerebellum. The pulse continued to beat for two hours and thirty-five minutes after natural breathing had ceased. Artificial respiration was kept up for two hours.

CHEATLE.

98. A boy nine years of age with right-sided cholesteatoma was taken ill with pyæmic symptoms. Swelling over the mastoid process. A thick strand could be felt in the neck to within 2 *cm* of the clavicle. Gerhardt's symptom present. The radical operation was performed; the jugular vein was ligated 1 *cm* above the clavicle. The vein and the sigmoid sinus were evacuated. There was dulness on the right side low down in the lung. Four days after operation there was cough, fœtid expectoration, and continuous temperature of about 38.5° C. Two weeks after the first operation a rib was resected and an abscess of the lung evacuated with the Paquelin cautery. Streptococci were found. Normal temperature two days later. The wound in the neck was healed after three weeks, the wound in the lung after four and a half weeks.

BRUEHL.

99. DENCH reports on 22 operated cases, of which 2 were fatal,—one of septic pneumonia, and the other of acute nephritis, perhaps caused by the anæsthetic. In 4 cases the internal jugular had to be ligated; in all healing took place. In all doubtful cases it is best to remove the vein to exclude danger of general infection, although this is not necessary in every case of sinus thrombosis. If the patient has remained under observation for several days without rise of temperature and without symptoms of general infection, the evacuation and removal of the thrombus are sufficient, if such is present. In those cases where during operation it becomes apparent that thorough removal cannot be undertaken and infectious material is likely to remain in the vein, immediate excision is necessary. If after a simple operation with resection of the sinus symptoms of general infection remain for two or three days, the vein also should be excised.

CLEMENS.

100. At the first operation the sinus was found broken down and was tamponed. Fever and chills began to appear. The jugular vein was ligated four days later. The symptoms persisted. Iodine was found in the urine and iodoform intoxication was suspected. After replacing the iodoform gauze with sterile gauze rapid improvement took place and persisted.

ZIMMERMANN.

101. This case is instructive from a number of points. First of all, we should not wait for chills to make a diagnosis of sinus disease. Slight, regular fever, continuous headache, vomiting, and depression are suspicious. Second, if pus is found about a sinus this sinus must be punctured as an apparently normal exterior may hide a purulent thrombus. ZIMMERMANN.

102. A woman twenty-four years of age, was affected with severe meningeal symptoms. She had suffered for years with recurrent otorrhœa. At operation a purulent focus was found in the attic which had destroyed the tegmen, and the prominent dura was covered with granulations. Eight days later the symptoms were completely relieved. LAURENS agrees with Broca that in this case the meningeal irritation symptoms resulted from the inflammatory œdema in the neighborhood of the purulent focus and that the œdema disappeared on relieving the purulent focus, just as in a case of ordinary abscess. ZIMMERMANN.

103. A very interesting discussion on otitic meningitis. A single case is reported showing the successful operative treatment of purulent otitic meningitis where the diagnosis had been confirmed before operation by lumbar puncture. A man, eighteen years of age, with chronic suppuration, became suddenly ill with distinct meningeal symptoms. Lumbar puncture revealed a cloudy fluid rich in leucocytes. The radical operation was performed with exposure of the dura in the middle and posterior cranial fossæ. The dura was normal. After operation apparent health. One month later meningeal symptoms again set in. Lumbar puncture again drew off fluid with increased quantity of leucocytes. The cyanosis and irregular respiration were suggestive of cerebellar abscess which was found and evacuated. At the same time the radical operation was done on the other ear, which also suffered from chronic suppuration. Recovery took place.

In this case we have a meningitis healed twice with caries of the roof of the tegmen tympani after removal of the main focus. BRUEHL.

104. Notwithstanding radical evacuation of a cholesteatoma, symptoms appeared suggestive of temporal lobe abscess—namely, progressive left-sided paresis of the extremities, rather uniform rise of temperature, obstinate headache, and marked weakness. Aphasia was wanting. At the operation BROCA—notwithstanding

puncturing through the tegmen tympani in various directions—did not find a drop of pus. As the canula was forced in the direction of the posterior cornu a large quantity of cerebro-spinal fluid was evacuated. After operation the patient made a rapid recovery.

This case is regarded as serous meningitis which must always be suspected when the supposed abscess is not found. The direct puncture of the lateral ventricle has better chances for cure than the lumbar puncture, as the foramen of Monro may be occluded.

ZIMMERMANN.

105. The author discusses the symptoms, gross and pathological anatomy, prognosis and treatment of hernia resulting from opening the dura and especially those which set in after an interval of a few days. They can usually be avoided by careful packing, in cases where it is possible, by suturing the dura, and above all by a sufficient evacuation of the abscess so that subsequent increased pressure does not occur. If the hernia has occurred it is usually best to pursue the expectant plan together with asepsis and moderately compressing bandages.

ZIMMERMANN.

106. A patient was presented where the sinus, jugular bulb and vein had been exposed to a marked extent. Though the vein was thrombosed down to the clavicle and was ligated directly over the sternum, recovery took place.

BRUEHL.

107. The unusual feature of this case is that fourteen days after an operation where sinus thrombus had been evacuated on the diseased side, symptoms of thrombosis on the other side set in. Rest in bed and antiphlogistic measures relieved the condition rapidly.

MOELLER.

d.—OTHER MIDDLE-EAR DISEASES.

108. **Reik.** Catarrhal, non-purulent otitis, a factor in the etiology of facial paralysis. *Johns Hopkins Hospital Bull.*, April, 1902.

109. **Gellé.** A case of hysterical mastoid pain. *Arch. internat. de laryng., d' otol., et de rhinol.*, vol. xv., No. 1.

108. If facial paralysis appears during a cold it is probably produced by otitis media with extension of the inflammation to the nerve or pressure from exudate. The best method of treatment is paracentesis. In cases of facial paralysis aural examination should never be neglected.

CLEMENS.

109. In a young girl of eighteen, after severe mental shock,

marked pain was felt in the mastoid associated with other hysterical symptoms. The mastoid was opened by another physician, without result. As a differential diagnostic point, the pain in this case was superficial and appeared to have its location in the skin. The author thinks that operation in these cases is of no value and recommends psycho-therapy in addition to suggestion; antiseptic and calnative ear baths may be employed. SCHWENDT.

NOSE.

a.—GENERAL PATHOLOGY AND SYMPTOMATOLOGY.

110. **Abignon.** The role of the nasal fossæ in the prophylaxis and treatment of pulmonary and laryngeal tuberculosis. *Arch. internat. de laryng., d'otol., et de rhinol.*, vol. xv., No. 2, March-April, 1902.

111. **Schoenemann.** Changes in the vessels contained in the nasal mucous membrane in nephritis. *Arch. f. Laryng.*, xii., 3.

112. **Thost.** On hay-fever. *Münch. med. Wochenschr.*, 1892, Nos. 17, 18.

113. **Linder.** On nasal dysmenorrhœa. *Münch. med. Wochenschr.*, 1902, No. 22.

114. **Collet.** Vertigo of nasal origin. *Ann. des mal. de l'or., du lar.*, 162, 1902.

115. **Holländer.** On the mechanical disposition to tuberculosis, especially in regard to plastic operations on the nose for lupus. *Berl. klin. Wochenschr.*, 1902, No. 14.

110. Tuberculous infection usually occurs from the air. The nasal cavities serve to filter the air. Tubercle bacilli and diphtheria bacilli are frequently found in the nasal secretion of the vestibule in healthy subjects. In the deeper parts these bacilli become more scarce. This is probably because the nasal mucosa has a definite antiseptic action associated with a phagocytic activity of the leucocytes. Every retronasal catarrh is dangerous from the possibility of tubercular infection, as it is probable that it is the beginning of this infection. The regulating of temperature and humidity of the inspired air by the nasal cavities is not to be undervalued. It has been shown that the amount of hæmoglobin in the blood is reduced where nasal respiration is interfered with and is increased in free respiration. Hence thorough and free respiration should always be aimed at. Swellings of the turbinals, spurs and deflections should be removed. The treatment of the nose, in short, forms a part of the prophylaxis against tuberculous infection. SCHWENDT.

111. The author has examined the nasal mucosa in eight different forms of nephritis and has found that the number of capillaries in the epithelium is increased, that they break through the basal mucous membrane, and that the capillary loops push themselves through the basement cells. The capillary wall and epithelial coverings burst and the blood is let out. These changes are characteristic of nephritis as they were absent in 75 other cases. Clinically, in the presence of severe hemorrhage in nephritic patients one should not waste time in looking for distinct bleeding points but should tampon at once.

ZARNIKO.

112. This is the result of the examination of 400 patients. The very many interesting facts must be read in the original. It is interesting to see that in a comparatively large number of persons operations on the nose have been followed with favorable therapeutic results.

SCHEIBE.

113. In about 30 cases dysmenorrhœa was influenced by cocaineizing the lower turbinals and the tuberculum septi. In 16 of these cases the same effect was also obtained by suggestion. In several cases during laparotomies where the internal genitals were exposed, the corresponding parts of the nose were cocaineized and repeated transient hyperæmias of the uterus were observed. The author recommends the nasal treatment of dysmenorrhœa. According to the experience of the reviewer, two patients upon whom he was induced to try the nasal treatment both with cocaine and galvano-cautery for dysmenorrhœa did not get relief.

SCHEIBE.

114. A man of thirty-three years had experienced three times in the course of a month pain in the neck with simultaneous vertigo, after a feeling of irritation in the nose and sneezing. The author regards this as a form of nasal vertigo which passed along the second branch of the trigeminus to certain bulbar centres causing secondary cerebral anæmia.

ZIMMERMANN.

115. In lupus of the nose the mechanical closure of nasal respiration is followed by a descending form of tuberculosis of the upper respiratory tracts and, on the other hand, the lupus process in the upper respiratory tracts will get well if the primary nasal lupus is healed or the stenosis of the nasal openings removed. In performing a rhinoplasty it is more important to provide a free nasal opening rather than form a new septum.

MUELLER.

b.—METHODS OF EXAMINATION AND TREATMENT.

116. **Courtade.** A graphic measure of the impermeability of the nasal fossæ. *Arch. internat. de laryng.*, etc., vol. xv., No. 1.

117. **Jürgens.** The diagnostic importance of the rhodan reaction on the saliva in ear disease. *Monatsbl. f. Ohrenheilk.*, 1901, No. 8.

118. **Downie.** On the subcutaneous injection of paraffin for the removal of deformities of the nose. *Brit. Med. Journ.*, May 3, 1902.

119. **Wroblewski.** On resection of the lower turbinal. *Arch. f. Laryng.*, xii., 3.

116. This instrument serves to measure the extent of nasal respiration and consists of three glass plates of which two are held to the outer nasal openings and the third in front of the mouth. The patient is asked to breathe naturally. The extent of the breathing is shown by the size of the precipitate which the moist expired air forms on the glass plates. In order to fix this precipitate the mirrors are covered with a substance which takes on an intense stain when moist. SCHWENDT.

117. The author has continued the experiments of Koerner and Muck on the rhodan reaction of the saliva in middle-ear disease, and has found that this reaction is usually absent in chronic and acute purulent processes, while it is present in catarrhal otitis, in sequelæ of purulent otitis, and in ear diseases where the middle ear is not affected. The reaction, however, was frequently slightly positive in the presence of purulent otitis as well as in purulent acute and subacute middle-ear diseases, and in certain cases of severe disease of the middle ear and mastoid process requiring operation. The latter results are explained, that in these cases the disease was probably in the mastoid process and that the tympanum was later involved so that Jacobson's nerve was spared.

In six cases the author was enabled by this reaction to make a diagnosis of middle-ear disease which is not possible in any other way. The reaction also gives a clue as to the course of the disease process. PIFFL.

118. DOWNIE relates two cases, with photographs, in which the deformity due to falling in of the bridge of the nose had been much improved by injecting paraffin subcutaneously. Care was taken to prevent the paraffin from infiltrating the eyelids.

ARTHUR CHEATLE.

119. The author objects to removing the turbinals with scis-

sors. He prefers to cut them partly through and then apply the cold or hot snare. Packing is usually not necessary.

ZARNIKO.

C.—OZÆNA.

120. **Minder.** Report of fifty autopsies on the nose and accessory cavities with regard to the measurements of the facial skeleton. *Archiv f. Laryng.*, xii., 3.

120. This paper has been written under Siebenmann's guidance. It must be remembered that Siebenmann identifies ozæna with the microscopical picture of epithelium metaplasia. If this condition is present, he speaks of ozæna which may be present with the formation of crusts and fœtor, and an associated atrophy of the nasal chambers may or may not be present. Fifty heads were examined according to the Starke method, and parts of the lower and middle turbinals were used for microscopical examination.

The cranio-metric index of the upper face was determined and the following conclusions were reached:

1. Leptorrhinia is usually associated with leptoprosopia; platyrrhinia is associated with chamæprosopia.
2. Metaplasia of the turbinal mucous membrane is as frequent in lepto- as in chamæprosopia.
3. Atrophy of the turbinals in metaplasia of the mucous membrane is not necessarily associated with an unusually dilated condition of the nasal cavities.
4. In about one-half of the cases ozæna was associated with disease of the accessory sinuses.
5. There is no etiological connection between ozæna and empyema.
6. A preponderance of sphenoidal or ethmoidal disease in combination with ozæna with empyema was not found.
7. Empyema of the accessory sinuses is most frequent in the acute infectious diseases, in tuberculosis, and very rarely in other diseases.
8. In combined empyemata the maxillary antrum and frontal sinus are most frequently involved.
9. In two autopsies the author found vomited matter in the nose, in the maxillary cavities, and in the ethmoid cells.

10. Very rarely it is not possible to push in the middle meatus with the finger in the opening of the maxillary antrum.

ZARNIKO.

d.—ACCESSORY SINUSES.

121. **Reitter.** Empyema of Highmore's antrum and acute peritonitis. *Monatsbl. f. Ohrenheilk.*, 1901, No. 8.

122. **Wright.** A case of isolated, unilateral, latent empyema of the sphenoidal sinus with delirium and mental symptoms. Operation. Recovery. *Ann. of Otol.*, Feb., 1902.

123. **Raoult.** The choice of operations in paradental cysts of the superior maxilla. *Ann. des mal. de l'or., du lar.*, 1902, 1.

121. The author describes a case of apparently idiopathic septic peritonitis where at autopsy an empyema was found in the left antrum of Highmore, and believes it possible that the peritoneal cavity was infected by swallowed pus from the empyema.

PIFFL.

122. **WRIGHT'S** patient, a physician, æt. fifty-seven years, presented himself with low speech, dazed manner, and in a desperate condition, owing to unendurable pain, described by raising the left hand to the vertex toward the occiput and bringing it down to his left eye and below. He had an attack of the grippe ten months before, with some coryza and pain, which subsided for five months. During a second attack of pain, which lasted some weeks, he was forgetful, irritable, and emotional, and two months later the pain gradually became atrocious, of a boring character with hyperæsthesia of the scalp, sneezing, without nasal discharge, but with a foul smell, in his breath, noticeable by others, of retained decomposing secretions, not of dead bone or ozæna. Temperature was subnormal, pulse slow. The patient's mind soon became wandering in occasional slight delirium. A foul-smelling cheesy mass had been spat up from his naso-pharynx. There was proptosis of the left eye. While pulling the soft palate forward by a tape and placing the finger of an assistant as high up as the tip end of the middle turbinal, the gouge end of an ethmoidal curette was introduced through the left nostril, until it rested upon the finger and infringed upon a solid wall, and was then raised a little above the finger. With a boring motion soft bone was perforated and pus was then seen far back in the anterior nares. The withdrawn instrument contained in the groove of the gouge cheesy, dark, foul-smelling secretion. The distance from the ala nasi to the firm posterior wall of the sinus was $3\frac{1}{2}$ inches. The right

sinus did not contain any pus. The middle turbinates were removed. After the operation a chill ensued, with a temperature of 104.5° F., but which fell on the next day to 100° F. The proptosis disappeared, as well as the pain and odor. The mental condition improved, but the delirium remained for ten days. A second operation from without, through the anterior and posterior ethmoidal cells into the sphenoidal sinus, did not reveal any pus or dead bone. The patient made good recovery.

M. TOEPLITZ.

123. Three cases are reported. The author recommends in non-infected dental cysts which project into the nose or into the superior maxilla, that the cysts be curetted through the alveolus and a counter opening be made. If the cyst is infected without involving the sinus, it should first be carefully evacuated and cleansed, so that by making a counter opening the sinus is not involved. This is, of course, not necessary if the sinus is already infected.

ZIMMERMANN.

c.—OTHER DISEASES.

124. **Bruck.** The treatment of fugacious erythema of the nose. *Allg. med. Centralztg.*, 1902, 53.

125. **Rose.** Rhinophyma. *Ljtopiss russkoj chirurgii.* Bd. vi., Heft 6.

126. **Pierce.** A case of congenital fistula of the external nose. *Ann. of Otology*, etc., May, 1902.

127. **Marie and Guillain.** Three cases of ulceration of the nose, coincident with lesion of the posterior columns of the cord. *Ann. des. mal. de l'or., du lar.*, 1902, 5.

128. **Lauffs.** Gonorrhoeal rhinitis in the adult. *Bresgen's Sammlung zwangloser Abhandlungen*, v., 11.

129. **Pegler, Hemington.** Specimen of cystic growth of the septum with microscopic section. *Laryng. Soc. of London*, April 11, 1902.

130. **d'Astros.** Nose-bleed in the newly born. *Arch. de méd. des infantes*, vol. v., No. 4.

131. **Henrici.** Cases of foreign bodies. *Arch. f. Laryng.*, xii., 3.

132. **Cheatle.** Specimen of rhinolith. *Laryng. Soc. of London*, April 11, 1902.

133. **Roulay.** Clinical study of the congenital occlusion of the posterior choanæ. *Arch. de méd. des infantes*, vol. v., No. 3.

134. **Kamm.** A case of closure of the posterior nasal opening. *Allg. med. Centralztg.*, No. 55, 1900.

135. **Brochowski.** On the occurrence of scleroma in Eastern Prussia, with a description of two new cases. *Inaug. Diss.*, Königsberg, 1902.

124. The application of gauze with benzine to the skin for a few seconds will relieve sudden erythema immediately.

BRUEHL.

125. Two typical cases are reported which have been healed by operation. Microscopically rhinophyma belongs in the class of granulation tumors because the process seems to be practically a very large production of granulation tissue, while the associated changes in the glandular elements of the skin are purely secondary.

SACHER.

126. A woman, aged twenty-four, had a swelling on the nasal dorsum, which gradually developed until after three months it was of the size of a pea. Oedema of the forehead and eyelids set in. The skin over the swelling was reddened. A supposed abscess was opened and the oedema and discharge disappeared. A fistulous passage remained subject to inflammation, with one opening over the lower third of the nasal bones and the other one above the cartilaginous portion of the tip, both communicating and discharging sebaceous material and pus; from the upper end a few hairs were protruding. The fistula was lined with mucous membrane. The upper end branched off and ended blindly beneath the left nasal bone. The fistula resulted from a congenital dermoid cyst.

M. TOEPLITZ.

127. In three cases, of which two are surely and one probably dependent upon syphilis, the nasal openings had been destroyed by ulcerations and drawn together by the scar. In one case, in addition to the scar there is a rodent ulcer which the author regards as an example of the well-known carcinoma originating in scar tissue. In all cases the knee phenomenon was absent. In one case the pupillary reflexes and cremasteric reflex were absent. Atactic disturbances were not present. In two cases at autopsy Burdach's columns were found slightly sclerosed. The connection, according to the author, is that the old syphilis at one time produced an ulcerative process and had at another the changes in the posterior columns.

ZIMMERMANN.

128. A report of two cases of gonorrhœal rhinitis coincident with urethral gonorrhœa. Gonococci were present in the nasal pus. Recovery after insertion of tampons with 1 per cent. argonin solution.

BRUEHL.

129. A man, aged thirty years, complained of obstruction of the left side of the nose. On examination, a bluish-gray body, resembling a polypus, was seen occupying the middle meatus. A distinct attachment seemed to be present in the septum at about the region of the tubercle or a little higher. It was removed with a

snare under antiseptic precautions. On removal it proved to be a cyst with a short hollow pedicle. No bleeding or running of fluid followed removal. A week later the patient suffered from shiverings, pain in the limbs, and headache, with a temperature of 100°.

As influenza was present in the house, the same diagnosis was made. Nine days after removal symptoms of meningitis set in, and death occurred six days later.

There seemed reason to suspect that the case was one of meningocoele. The section showed two distinct zones of tissue: an outer consisting of nasal mucous membrane, and an inner made up of connective tissue containing many elastic fibres, but without a definite squamous epithelial lining. ARTHUR CHEATLE.

130. Ten cases are reported, of which eight are syphilitic. Three varieties of epistaxis in sucklings in the first six months are described. (1) Resulting from local lesion in coryza, especially syphilitic coryza; (2) epistaxis in severe septic disease; (3) primary idiopathic bleeding. HARTMANN.

131. (1) Stone in the right tonsil which had formed around a wheat grain; (2) sleeve button in the larynx; (3) a rod, 6.5 cm long and thick as the little finger, was shot from a gun and penetrated the right cheek, passing through the antrum into the nose, perforating the middle turbinal and impinging on the septum. There was discharge of pus from the nose, fistula of the cheek, and ankylosis of the jaw. Extraction through the nose. ZARNIKO.

132. The rhinolith weighing 140 grains was removed from the right side of the nose. The patient was a woman fifty years old, and trouble had been present for twenty. The nucleus consisted of a portion of necrosed inferior turbinate bone. There was a history of syphilis. ARTHUR CHEATLE.

133. Two cases are reported. The closure in 80 per cent. of the cases is bony; in 10 per cent. partly, and in 10 per cent. entirely membranous. Incomplete closure is very rare. HARTMANN.

134. A patient thirty years old, presented complete closure of the right choana. The left was closed with the exception of a small opening the size of a bean. The closure was maintained by a fibrous wall which appeared to be resisting to examination with the probe. The mucous membrane moved on both sides during

phonation and swallowing. According to the author, this was a case of abnormal muscle fibres originating from palatal muscles.

HARTMANN.

135. To the five cases of scleroma reported in 1900, the author adds two more and speaks of the symptoms and differential diagnosis based upon these seven cases. The difficulty of diagnosis is shown by the fact that the ministerial investigation on the occurrence of scleroma in East Prussia met with negative results. The author states that in East Prussia, near the border line, there is an endogenous area of scleroma from which, in time, additional cases will probably come to treatment.

HARTMANN.

NASO-PHARYNX.

136. **Regnier.** Nervous troubles in relation to the presence of adenoid vegetations in the naso-pharynx in children. *Ann. des mal. de l'or., du lar.*, 1902, 2.

137. **Ilijisch.** The removal of adenoid vegetations in narcosis. *Wratsch. Gasetz*, 1902, No. 15.

138. **Lartigau and Nicoll.** A study of hyperplasia of the pharyngeal lymphoid tissue, with special reference to primary tuberculosis of the pharyngeal tonsil. *Am. Journ. of Med. Sciences*, June, 1902.

139. **Boulai.** Naso-pharyngeal polyps cured by galvano-caustic punctures. *Arch. internat. de laryng.*, etc., vol. xv., No. 2, March-April, 1902.

140. **Munger, Carl E.** Report on an unusual case of adenoids. *Annals of Otol.*, March, 1902.

141. **Montenyott.** Complications after adenoid operations. *Pediatrics*, May, 1902.

142. **Holmes.** Enormous naso-pharyngeal soft fibroma. *Ann. of Otol.*, May, 1902.

136. In a boy of eleven years choreic movements and relapsing facial eczema were cured by the removal of adenoids. In another case after similar operation, movements of the diaphragm, which were first very slight, later became pronounced.

ZIMMERMANN.

137. The author strongly recommends bromethyl.

SACHER.

138. LARTIGAU and NICOLL arrive at the following conclusions:
 "1. Adenoids consist essentially of hyperplastic pharyngeal lymphoid tissue. The epithelium and fibrous-tissue changes are inconstant and variable, and independent of the age of the patient. The new-formed fibrous tissue is largely perivascular in distribution. It may occasionally be one of the factors in the

process of disappearance of the adenoid. 2. The hyperplastic pharyngeal tonsil often contains micro-organisms, and these are mainly pyococcal forms. The bacteria for the most part lie near the surface, and the infection usually occurs from the surface, with or without demonstrable lesion of the epithelium. 3. Primary tuberculosis of adenoids is probably more common than most previous studies show. Sixteen per cent. contained tubercle bacilli, ten per cent. with characteristic lesions of tuberculosis. The tubercle bacilli were present in small numbers. 4. The lesions in primary tuberculosis of the adenoid are generally close to the epithelial surface and focal in character. Occasionally they may be found in the deeper parts of the pharyngeal lymphoid tissue. 5. The pharyngeal tonsil may be a portal of entry for the tubercle bacillus and other micro-organisms in localized or general infections."

M. TOEPLITZ.

139. Retronasal polyp was cured with galvano-caustic ignipunctures. The author recommends this procedure; although it takes a long time it appears perfectly safe.

SCHWENDT.

140. In the removal of adenoids in a boy of thirteen, a tumor was removed consisting of cartilage. The author assumes that this originated from an intervertebral disc.

HARD.

141. On the third day after operation for the removal of adenoids, chorea of the face and extremities set in followed by severe endocarditis with a temperature of 105° F. Recovery after two months.

HARD.

142. A woman, æt. nineteen, had suffered from otorrhœa until her sixteenth year, from difficulty of breathing since her third year, with embarrassed respiration, frequent cough, and, lately, difficult deglutition and return of food through the nose, which symptoms were aggravated by a severe attack of the grippe. The entire pharyngeal space was filled by a tumor hanging from the right side of the vault, of soft consistency, smooth surface, and of pale grayish color, extending from pillar to pillar, below to the base of the tongue. It was in contact with the epiglottis, adherent to the base of the tongue and posterior wall of the pharynx. The adhesions were separated by a blunt hook and the finger; the growth was lifted out of the lower pharynx. When the wire loop failed to extract it, it was twisted upon its long axis, until it gave

way at its point of attachment above and anterior to the mouth of the Eustachian tube. The microscopic examination revealed a soft fibroma arising from the submucous connective tissue. The description of the case is followed by a full study of the literature of the subject, and illustrated by photographs of the tumor, microscopic sections, and by the picture of another patient with a "frog face" who had died from chloroform after the operation on the tumor. A bibliography containing 298 titles is appended.

M. TOEPLITZ.

SOFT PALATE AND PHARYNX.

143. **Clauda.** A case of perforating tuberculous ulceration of the palatal vault. *Arch. internat. de laryng.*, etc., vol. xv., 1, January and February, 1902.

144. **Bissell.** The bacterial pathology, symptomatology, treatment, and quarantine of tonsillar inflammations. *Med. News*, May 31, 1902.

145. **Siredey.** On the use of the methylene blue in the treatment of angina due to fusiform bacilli and the spirilli of Vincent. *Ann. des mal. de l'or., du lar.*, 1902, 3.

146. **Lermoyez and Gassne.** Acute gout of the pharynx. *Ann. des mal. de l'or., du lar.*, 1902, 5.

147. **Weber.** Secondary hemorrhage on the fifth day after tonsillotomy. *Laryngoscope*, April, 1902.

148. **Roy.** Two unusual cases of hemorrhage following adenotomy and tonsillotomy. *Laryngoscope*, Feb., 1902.

149. **Hartz.** Tonsillar and peritonsillar suppuration. *Am. Med.*, April 19, 1902.

150. **Brown.** A fatal case of primary acute infectious pharyngitis with extreme leukopenia. *Am. Med.*, April 19, 1902.

151. **Hoedlmoser.** On fulminating phlegmon of the pharynx and larynx. *Mon. f. Ohrenheilk.*, 1901, No. 7.

143. In this case the dysphagia was very pronounced. The diagnostic symptoms are described which serve mainly to differentiate this rare condition from syphilitic perforations. Cauterization with lactic acid was recommended.

SCHWENDT.

144. **BISSELL** distinguishes: first, follicular tonsillitis simplex without known micro-organismal origin; secondly, tonsillitis showing the presence of the Klebs-Loeffler bacillus, necessitating the use of anti-toxine; thirdly, tonsillitis revealing the streptococcus pyogenes to the exclusion of other organisms of which several fatal cases are fully given; fourthly, tonsillitis produced by the micrococcus of sputum septicæmia. Tonsillar infection due to

oidium albicans is also considered. In rheumatic anginas, fifty-two cases of suppurative tonsillitis contained as predominating organisms the staphylococcus pyogenes aureus, being the cause of the pus production. In three instances, an organism corresponding to the colon bacillus was found in the abscess contents. For disinfection of rooms a candle consisting of paraformaldehyde is used and supplemented by formaline and carbolic acid (5%), for substances needing their solvent and penetrating powers.

M. TOEPLITZ.

145. As the fusiform bacillus and spirillum are easily stained with methylene blue, the author was induced to use this remedy in the treatment of the disease. The remedy is directly applied in the powdered form to the ulcers and deposits. After three days decided improvement took place, which was complete within a week.

ZIMMERMANN.

146. The authors report this case fully, aware of the scepticism with which such disease of the pharynx is frequently treated. The case was that of an old gentleman who in the middle of the night was suddenly taken with severe pain in the neck, fever and general prostration. The pain continued for eight days, during which time only liquid food could be taken and in drops. Local symptoms beyond an unusual redness of the left side of the pharynx were not present. The authors suspected a peritonsillar abscess. Suddenly on the ninth day the symptoms disappeared without any evacuation of blood or pus. On the following night typical gouty swelling appeared in the great toe, from which it seemed proper to assume that the preceding pharyngeal inflammation was of a gouty nature. A number of similar observations are added.

ZIMMERMANN.

147. A pale and anæmic girl, æt. five, was operated on for very hard and tough tonsils, without an anæsthetic, with the tonsillotomy. The hemorrhage ceased fifteen minutes after the operation. On the fifth day an oozing hemorrhage from the left tonsil, which had offered more resistance to the cutting blade than the right, was checked by a gargle of diluted Monsel's solution. The hemorrhage returned, the child became unconscious, and the hemorrhage ceased for two hours. Large quantities of clotted blood were vomited. The hemorrhage returned, but was permanently stopped with Monsel's solution.

M. TOEPLITZ.

148. In Case 1, a young lady had, after the use of cocaine and

suprarenal extract, a small piece of adenoid tissue removed from the naso-pharynx. Three hours later excessive hemorrhage took place, which did not stop until the patient fainted. This might have been a vicarious hemorrhage, since the menstruation was expected at the time of operation, but only made its appearance after the hemorrhage had ceased.

The Case 2 was a girl, aged four, whose right tonsil was removed with a tonsillotome. On the fifth day after operation an alarming hemorrhage occurred, which was stopped with suprarenal extract, given per os, one grain every two hours.

M. TOEPLITZ.

149. The obstruction of the supratonsillar fossa by the plica triangularis predisposes to circumtonsillar suppuration. Recurrence of peritonsillar abscess is prevented by radical excision of upper part of tonsil, removal of the plica triangularis, and breaking up of adhesions.

M. TOEPLITZ.

150. A woman æt. twenty-nine, with a family history of tuberculosis, had chlorosis with gastric ulcer when fourteen years old, coughed for several winters, had a pleurisy, and lost 28 pounds. She was operated for lacerated cervix and perineum, but exerted herself on the second, and exposed herself on the third day. Within two hours she had a chilly sensation with rapid rise of temperature to 103° , pulse 120. The next morning the temperature was still high, the skin was moist, the expression anxious, and restlessness prevailed; the throat felt a little sore, pharynx and tonsils were reddened, and the latter slightly swollen. The spleen, cervical, supraclavicular, axillary, epitrochlear, and inguinal glands were enlarged. Temperature, 101.6° . Pulse, 112. At noon, temp. 103° , pulse 118. Blood examination: hemoglobin, 65%; reds 3,240,000, whites 1000. The leukocytes on the following day were 400 per *cm*; on the fourth day, 320. The temperature rose to 105.4° ; pulse 120. The throat was now dark, the left side more involved. The swelling of the tonsils and œdema of the neighboring parts increased slowly; the pain was more intense on the fifth day. No fluctuation was felt. Œdema became much larger and was scarified on the sixth day. Cultures made from the knife were the staphylococcus pyogenes albus and aureus. A membrane formed over the wounded area. Regurgitation of food through the nose took place. Blood count made on each succeeding day showed a steadily decreasing leucocyte amount: 260

on the sixth day, until on the seventh, the day of death, which occurred suddenly from œdema glottidis, very few were found. Autopsy: A few old adhesions at the left apex pulmon., spleen much enlarged, epiglottis œdematous, posterior wall covered with decubitus and necrotic tissue above, œdema closed the glottis, neighboring glands greatly enlarged, and pharynx much inflamed. No pus; heart's blood, liver, bone marrow, epiglottis, vocal cords, and left kidney showed pure culture of staphylococcus pyogenes albus. Microscopical examination fully given.

M. TOEPLITZ.

151. An otherwise healthy man of forty-three years, suffered from the diffuse infiltration of the mucous membrane of the larynx and pharynx with pain, fever, and dyspnœa, the last being so great that tracheotomy had to be performed. Death ensued on the fifth day. At autopsy various abscesses were found in the tonsils. There were a number of irregular purulent ulcers in the pharynx and larynx. The submucous and muscular layers of the pharynx and larynx showed purulent infiltration, and connective tissue between the larynx and œsophagus was similarly affected. After discussing the differential diagnosis between abscess and erysipelas of the larynx, the author describes the bacteriological investigation which showed that the micro-organisms contained in the pus cells and discharge at autopsy were cocci very similar to the diplococcus pneumoniae of Fraenkel-Weichselbaum.

PIFFL.

BOOK NOTICES.

I. A Treatise on the Diseases of the Eye, Nose, Throat, and Ear. For Students and Practitioners. By Various Authors. Edited by Dr. W. C. POSEY, of Philadelphia, and Dr. JONATHAN WRIGHT, of Brooklyn.

In reviewing the ophthalmic part of this volume of 1238 pages, the writer's pen slipped in giving it a weight of fifteen pounds, whereas in fact it is only six pounds eleven ounces, but even with this reduction nobody will find it light-weight. The division of space gives 685 pages to the eye, 382 to the nose and throat, 125 to the ear, and 38 to a carefully prepared, double-column index.

The authors of the different chapters on nose and throat are :

J. L. GOODALE, of Boston. Histological pathology. Minute descriptions with black and colored drawings.

J. E. NEWCOMB, of New York. Methods of examinations, instruments and apparatus, and their use.

CH. W. RICHARDSON, Washington, D.C. Inflammatory diseases of the upper air-passages; hay fever (rhinorrhœal, nasal, and cerebro-spinal); asthma; influenza.

W. K. SIMPSON, New York. Diphtheria; intubation; syphilis; tuberculosis; lupus and leprosy of nose and throat; chronic laryngeal stenosis; foreign bodies of nose and throat; rhinoliths.

W. E. CASSELBERRY, of Chicago. Neoplasms of the nose and larynx; the local, medicinal, and surgical treatment of the larynx.

ST. CLAIR THOMSON, London. Diseases of the accessory sinuses.

H. S. BIRKETT, Montreal. Diseases of the oro-pharynx (tonsils, etc.) and naso-pharynx (adenoids, etc.).

EMIL MAYER, New York. Neuroses of the nose and throat.

F. E. HOPKINS, Springfield, Mass. External deformities of the nose; cleft palate.

The reviewer had to abstain from going into an analytical discussion of the different chapters above enumerated, but he can say

that the authors have demonstrated their competency and presented the subjects in the manner most congenial to the American reader. The numerous drawings are well enough executed to illustrate the authors' meaning and therefore greatly assist the student. It is gratifying to notice, in this and other modern text-books designed for the practitioner, that more stress is laid on the pathology of the disease, the physical methods of diagnosis, and the hygienic management of the patient than on internal remedies. This tendency is a wholesome antidote to the multitude of modern remedies with which high-pressure chemical works and enterprising drug firms flood the general medical journals, not alone in their advertising columns.

The last part of the big volume—which concerns us particularly—is, we are sorry to say, disappointing. The arrangement of the subject-matter is so huddled that it makes the appearance as if the publisher or the editors, or both, wanted to be through with it as quickly as possible. The whole of otology—one of the most progressive and important departments of modern medicine in the fine differentiation of its anatomy, the marvellous, most interesting, and only partially-solved questions of its physiology and pathology, its intimate connection with the brain-functions being one of the mainstays of practical, I mean experimental not speculative, psychology, not to speak of its dominant influence on intracranial surgery: all of which is crowded to the end of this bulky volume and entrusted to only four men, who, it seems, worked disjointedly.

The first chapter, 22 pages, contains conventional description of the anatomy of the outer ear, its examination, a few instruments and illustrations (all borrowed),—on the whole an insufficient presentation. The second chapter (by E. A. Crockett, Boston), making a great jump, teaches us the internal ear, the auditory nerve, and deafmutism, all in 9 pages. The third chapter is substantial and fairly original (by Hy. A. Alderton, of Brooklyn), 67 pages, with many engravings, partly from the author's collection—of the borrowed ones we may particularly mention three from Körner's *Eitrigen Erkrankungen des Schläfenbeins* as very instructive. The specimens from the author's collection are good, but what is of didactic value might be illustrated by fewer drawings more to the point. The reproduction (on p. 1120) of a figure from Bacon's *Manual* is much worse than the original (p. 358, 3d edition).

The last chapter, on chronic non-suppurative middle-ear disease, is by A. H. Cheate, London. A short description on the hearing function introduces the exploration of the E. tube with a catheter too much curved for our people. Then follow the classification and description of forms of catarrhal otitis media, accumulation of fluid in inferior part of the drum cavity, fixation of the stapes, etc., and the usual modes of treatment,—everything on 23 pages. The descriptions are quite to the point, mentioning, without exaggeration of expected results, the means best adapted; also stating candidly where special treatment is of no benefit.

H. KNAPP.

II. Transactions of the Otological Society of the United Kingdom. Vol. III. Third Session, 1901-1902. A neatly gotten-up volume of 125 small octavo pages. London: J. & A. Churchill, 7 Great Marlborough St. 1902.

The contents of this volume have been published in the abstracts we received through the kindness of the Hon. Secretary, Wm. Milligan. The volume is very neat, and gives the transactions in full, with engravings and photographs. They are very pleasant and instructive reading. We are sure that all English-speaking aurists, and a great many of other tongues, will regularly order these volumes.

H. KNAPP.

III. We welcome the appearance of a **general review** of otology, to be published, in German, with the title **Internationales Centralblatt für Ohrenheilkunde**, herausgegeben von [edited by] Dr. O. BRIEGER, in Breslau, and Prof. Dr. G. GRADENIGO, in Turin, in conjunction with Dr. Cresswell Baber, Brighton; Prof. Dr. L. Bayer, Brüssel; Dr. E. S. Cassanello, Montevideo; Dr. J. Costiniu, Bukarest; Priv.-Doz. Dr. B. Gomperz, Wien; Prof. Dr. A. Guye, Amsterdam; Dr. C. R. Holmes, Cincinnati; Privat-Dozent Dr. Krepuska, Budapest; Dr. H. Luc, Paris; Dr. E. Morpurgo, Triest; Privat-Dozent Dr. F. Rohrer, Zürich; Prof. Dr. E. Schmiegelow, Kopenhagen; Dr. Suné Molist, Barcelona; Privat-Dozent Dr. St. von Stein, Moskau; Prof. Dr. V. Uchermann, Kristiania; in twelve numbers a year, beginning January, 1903. Price, Mk. 16 [\$4]. Publisher: J. A. Barth, at Leipzig, to whom to direct orders.

The *Centralblatt* will publish reviews (abstracts), exclusively, of all that refers to otology, including such publications on

general medicine as are in relation to the healthy and diseased auditory organ. These abstracts, which shall follow the original publications as early as feasible, will, from time to time, be supplemented by comprehensive reviews on the present status of special subjects, important questions, and definite fields of research and practice. This program is decidedly excellent and the names of the editors and collaborators warrant the success of the enterprise. As to the expediency of a new journal in otology, there being a good many in existence, all of them having a reviewing department of the world's otological work, we need only remind our readers of the fact that the literature on any field has a tendency to follow, in quality and quantity, the labor bestowed on the cultivation of that field. The success of new enterprises is governed by the law of the survival of the fittest.

Four numbers of the **Review** (Oct., Nov., Dec., 1902, Jan., 1903) have appeared. They are printed on fairly good paper, 48 octavo-pages each number. The arrangement of the subject-matter is as follows: I. Collective review on a special subject, of 4-10 pages. II. Abstracts: (1) Anatomy, Embryology; (2) Physiology; (3) Pathologic Anatomy; (4) Pathology and Diagnosis; (5) Therapeutics and Technique. III. Reports of Societies. IV. Nose and Pharynx. V. Professional News.

The quality of the abstracts is in line with those to be found in the better class of otological periodicals. If provided with a good index, at the end of the year it will be a permanent valuable addition to the library of any aurist.

H. KNAPP